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**The Structure and Use of Collective Numeral Phrases in Slavic:  
Russian, Bosnian/Croatian/Serbian, and Polish**

**Committee:**

---

Gilbert C. Rappaport, Supervisor

---

John S. Kolsti

---

Thomas J. Garza

---

Stephen M. Wechsler

---

John T. Beavers

**The Structure and Use of Collective Numeral Phrases in Slavic:  
Russian, Bosnian/Croatian/Serbian, and Polish**

**by**

**Hyoung Sup Kim, B.A.; M.A.**

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## **Dedication**

For

my mom who sacrifices her life to teach me the value of education,

my wife Hyunhi Kang who believed me,

my daughter Christina and son Christopher who inspired me...

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**The Structure and Use of Collective Numeral Phrases in Slavic:  
Russian, Bosnian/Croatian/Serbian, and Polish**

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This dissertation investigates Slavic collective numerals and their syntactic structure from descriptive and structural perspectives on the basis of the operation *Agree*. The headedness of Slavic collective numeral phrases will be focused on with three Slavic languages: Russian, Bosnian/ Croatian/Serbian, and Polish. To analyze the semantic and morphosyntactic properties of Slavic collective numeral phrases, I adopted two important concepts proposed by Rappaport (2002, 2006): i) Minimal Lexical Representation (MLR) and ii) pre-valued abstract Quantitative Case (QC). MLR represents the semantic and formal features of nouns, which selectively combine with collective numerals, while the idea of QC can predict the heterogeneous and homogeneous patterns of case assignment. The presence of pre-valued abstract QC triggers heterogeneous morphosyntax, while the absence of QC triggers homogeneous morphosyntax. The spell-out forms of collective numerals are the direct result of morphological syncretic rules. In regard of the headedness of Slavic collective numeral phrases, this research claims that nouns are the heads of Slavic numeral phrases on the grounds that numerals, adjectives, and other

modifiers agree with nouns, which functions as the locus of morphosyntax (Zwicky 1985).

The use of collective numerals is determined by the properties of nouns. In each chapter, Slavic collective numerals will be analyzed from the three points of view: i) semantics, ii) morphology, and iii) syntax. Collective numerals can emphasize the meaning of collectivity, totality, and cohesiveness as an aggregate. BCS and Polish collective numerals strictly specify a group of mixed gender, while Russian does not. BCS is characterized by three different types of collective numerals: i) collective numeral substantives (*dvojica* 'two', *trojica* 'three', *četvorica* 'four', *petorica* 'five', etc.), collective numerals (*dvoje* 'two', *troje* 'three', *četvoro* 'four', *petoro* 'five', etc.), and collective numeral adjectives (*dvoji* (m.)/ *dvoje* (f.)/ *dvoja* (n.) 'two', etc.). Moreover, indeclinability of numerals is one of the characteristics of BCS numerals. Polish has secondary gender, so-called virile marking, which does not apply to collective numerals. Polish collective numerals are strictly used to express a group of mixed gender.



## Table of Contents

<b>Chapter One: Introduction .....</b>	<b>1</b>
1. THE SLAVIC NUMERAL SYSTEM.....	1
1.1. Cardinal Numerals .....	2
1.2. Collective Numerals.....	3
2. THE ISSUES OF HEADEDNESS .....	4
2.1. Theory of Headedness.....	4
2.1.1. QP-headedness Structure .....	5
2.1.2. NP-headedness Structure .....	7
3. THE THEORETICAL BACKGROUND: SLAVIC COLLECTIVE NUMERALS.....	10
3.1. Theoretical Framework.....	10
3.1.1. Abstract Quantitative Case and its Spell-Out Rules .....	11
3.2. Case Assignment.....	14
3.2.1. Structural Case Assignment.....	15
3.2.2. Inherent Case Assignment .....	15
3.3. Agreement (Concord) .....	16
3.4. Subject-Predicate Agreement (SPA).....	18
4. ORGANIZATION .....	19
<b>Chapter Two: Russian Collective Numerals .....</b>	<b>22</b>
1. INTRODUCTION.....	22
1.1. The Definition of the Collective Numerals.....	23
1.2. The Formation of the Collective Numerals .....	25
1.3. Diachronic Development of the Collective Numerals .....	27
1.4. Declension of the Collective Numerals .....	29
1.4.1. Pluralia Tantum (PT) .....	30
2. THE GENERAL USE OF COLLECTIVE NUMERALS .....	34
2.1. Animate Nouns .....	37
2.1.1. Masculine Nouns or Dual-Gender Nouns	
Indicating a Male Person.....	37

2.1.2. Substantivized Adjectives (Adjectival Nouns) .....	38
2.1.3. Nouns Indicating Persons .....	39
2.1.4. Personal Pronouns.....	39
2.1.5. Feminine nouns (only in colloquial usage).....	40
2.1.6. Animals.....	42
2.1.7. Others .....	43
2.2. Inanimate Nouns .....	44
2.2.1. Inanimate Pluralia Tantum Nouns .....	45
2.2.2. Nouns Indicating Pairs of Objects .....	46
2.2.3. Others .....	46
3. ANALYSIS OF COLLECTIVE NUMERALS .....	47
3.1. Semantic Analysis.....	47
3.1.1. Individuated vs. Collective Meanings.....	47
3.1.2. Animate vs. Inanimate .....	48
3.1.3. Social Ranks: High Ranks vs. Low Ranks .....	49
3.2. Morphological Analysis.....	50
3.2.1. Substantivised Adjectives .....	50
3.2.2. Dual-Gender Nouns or Masculine Nouns in <i>-a</i> Indicating a Male Person.....	51
4. SYNTACTIC PROPERTIES OF RUSSIAN COLLECTIVE NUMERALS .....	53
4.1. Theoretical Background: Agree, Feature-Sharing, Spell-Out.....	53
4.2. Headedness of the Russian Collective Numerals.....	54
4.2.1. Abstract Quantitative Case and its Spell-Out Rules .....	55
4.2.2. Syntactic Structure of Collective Numeral Phrases .....	59
4.2.3. Evidence for the Assumption that NPs are Heads .....	60
4.2.3.1. Genitive-Accusative .....	60
4.2.3.2. Participles .....	62
4.2.3.3. Attributive Modifiers .....	63
4.2.3.4. Autonomous Use of the Collective Numerals .....	65
4.3. Subject-Predicate Agreement (SPA).....	66



2.2.1. Inanimate Pluralia Tantum Nouns .....	94
2.2.2. Nouns Indicating 'pairs of objects' .....	95
3. THE ANALYSIS OF THE BCS COLLECTIVE NUMERALS .....	95
3.1. Semantic Analysis.....	96
3.1.1. Gender Specification of Group Members .....	98
3.1.2. Individuated Meaning vs. Collective Meaning .....	99
3.2. Morphological Analysis.....	100
3.2.1. Adjectival Nouns .....	100
3.2.2. Dual-Gender Nouns or Masculine Nouns in <i>-a</i> .....	101
3.3. Syntactic Analysis.....	103
3.3.1. Theoretical Background: Feature-Sharing, Agree, and Spell-Out.....	103
3.3.2. Abstract Quantitative Case .....	106
3.3.3. Headedness of the BCS Collective Numbers.....	107
3.3.3.1. The Collective Numeral Substantives: <i>dvojica, trojica, petorica</i> .....	111
3.3.3.2. Collective Numerals: <i>dvoje, troje, četvero</i> .....	113
3.3.3.3. The Collective Numeral Adjectives: <i>dvoji (m.) / dvoje (f.) / dvoja (n.)</i> .....	114
3.3.3.4. NP-hypothesis of Collective Numeral Phrases .....	114
3.3.3.4.1. Animacy Rule.....	115
3.3.3.4.2. Attributive Modifiers.....	116
3.3.4. Subject-Predicate Agreement (SPA).....	118
3.3.4.1. Agreement and Default.....	118
3.3.4.1.1. The Collective Numeral Substantives .....	120
3.3.4.1.2. The Collective Numerals.....	121
3.3.4.1.3. The Collective Numeral Adjectives .....	122
3.3.4.2. Co-occurrence with Pronouns.....	123

3.3.5. Case Assignment.....	125
3.3.5.1. Structural Case Assignment.....	125
3.3.5.1.1. Nominative Case vs.	
Quantitative Case .....	125
3.3.5.1.2. Accusative Case .....	128
3.3.5.2. Inherent Case Assignment .....	130
<b>Chapter Four: Polish Collective Numerals.....</b>	<b>131</b>
1. INTRODUCTION.....	131
1.1. Polish Numerals .....	131
1.1.1. Cardinal Numerals .....	132
1.1.2. Ordinal Numbers.....	134
1.1.3. Collective Numerals.....	135
1.2. Definition of Collective Numerals.....	136
1.3. The Formation and Diachronic Development of Collective	
Numerals .....	138
2. THE GENERAL USE OF POLISH COLLECTIVE NUMERALS.....	138
2.1. Animate Nouns .....	139
2.1.1. Masculine Nouns and Dual-Gender Nouns .....	139
2.1.2. Substantivised Adjectives (Adjectival Nouns) .....	143
2.1.3. Generic Nouns: <i>ludzie</i> and <i>dzieci</i> .....	145
2.1.4. Personal Pronouns.....	146
2.1.5. Nouns in -ę Indicating Young Animate beings.....	148
2.2. Inanimate Nouns .....	151
2.2.1. Pluralia Tantum Nouns .....	151
2.2.2. Nouns Indicating Pairs of Objects .....	153
3. THE ANALYSIS OF POLISH COLLECTIVE NUMERALS .....	153
3.1. Semantic Analysis.....	155
3.1.1. The Gender Specification of Group Members.....	155
3.1.2. Individuated Meaning vs. Collective Meaning.....	155
3.2. Morphological Analysis.....	157

3.2.1. Substantivised Adjectives .....	157
3.2.2. Mixed Declension Nouns.....	157
3.3. Syntactic Analysis.....	161
3.3.1. Theoretical Background.....	161
3.3.1.1. Abstract Quantitative Case .....	166
3.3.2. Headedness of Polish Collective Numerals .....	170
3.3.2.1. Syntactic Structure of Polish Collectives .....	170
3.3.2.2. Evidence of Headedness of Collective Numerals .....	172
3.3.2.2.1. The Animacy Rule .....	172
3.3.2.2.2. Attributive Modifiers.....	176
3.3.3. Subject-Predicate Agreement (SPA).....	179
3.3.4. Case Assignment.....	181
3.3.4.1. Direct Case.....	181
3.3.4.2. Oblique Case.....	182
<b>Chapter Five: Conclusion</b> .....	184
1. SUMMARY OF STUDY .....	184
2. FURTHER STUDY .....	189
<b>References</b> .....	191
<b>Vita</b> .....	196

## **Chapter One: Introduction**

This dissertation examines Slavic collective numerals from descriptive and structural perspectives. Slavic collective numerals have attracted less attention than cardinal numerals. They differ in that cardinal numerals are used for counting individual entities, whereas collective numerals are used for conveying a collective meaning, as well as some more idiosyncratic purposes, such as specifying mixed gender specification of a group, quantifying plural-only nouns, expressing stylistic differences, etc. The headedness of Slavic numeral phrases is still open to debate. The structural heads of Slavic numerals are closely related to their morphosyntactic behavior, because Slavic languages (except for Macedonian and Bulgarian) have strong morphological inflections.

This dissertation focuses on the morphosyntactic properties of Slavic collective numerals, i.e., the syntactic headedness of collective numeral phrases. We will examine one Slavic language from each of the three primary branches of the Slavic linguistic family: Russian from the East Slavic branch, Polish from the West Slavic branch, and Bosnian/Croatian/Serbian (henceforth, BCS) from the South Slavic branch. This research compares the linguistic properties of collective numerals across these languages to clarify the similarities and distinctions. This Introduction provides general information and formulates specific questions to be addressed. Chapter Two investigates Russian, Chapter Three and Chapter Four examine BCS and Polish, respectively.

### **1. THE SLAVIC NUMERAL SYSTEM**

Slavic numerals (except for *odin* ‘one’) have undergone the historical morphosyntactic changes of losing their inherent gender and number features (Cubberley 2002; Gvozdanović 1999; Jakubinskij 1953; Suprun 1959; Timberlake 2004). The

Common Slavic numeral expressions did not belong to one category as a separate, unique part of speech, e.g., *odin* ‘1’, *dva* ‘2’, *tri* ‘3’, and *četyre* ‘4’ were all adjectives, while *pjat* ‘5’ and higher numerals were feminine nouns (Suprun 1959: 27-38). The contemporary Slavic numeral system is a result of the diachronic linguistic re-structuring (Suprun 1959; Vinogradov 1947). Slavic numerals have a [case] feature, while they lack the features [number] and [gender] except *odin* ‘1’ and *dva* ‘2’ which express gender: e.g., *odin* (m.)/*odna* (f.)/*odno* (neut.), *dva* (m./neut.)/*dve* (f.). This incomplete set of formal features, i.e. defectiveness, breeds morphosyntactic idiosyncrasies in subject-predicate agreement and case assignment. Slavic numerals still remain in a hybrid status between nouns and adjectives, which, in turn, triggers the major issue of headedness in the Slavic numeral system.

### 1.1 Cardinal numerals

The major use of cardinal numerals is to count items and to quantify individual things or entities. Cardinal numerals emphasize an individuated interpretation, while collective numerals emphasize a collective interpretation, construing the quantified entities as a whole. In addition, cardinal numerals cannot specify a mixed gender group, while collective numerals can. Furthermore, as a result of the loss of the dual number, lower cardinal numerals (i.e., 2, 3, 4) are combined with nouns in the genitive singular forms, which are identical to the endings of old duals, in Russian and BCS. However, the genitive case of non-quantified nouns can be distinguished from that of quantified nouns in their stress marking. The former has stem stress, while the latter has stress on its desinence: e.g., *okolo čása* ‘about an hour’ vs. *dva časá* ‘two hours’.<sup>1</sup> The genitive

---

<sup>1</sup> Several Russian nouns (e.g., *rjad* ‘row’, *šag* ‘step’, *šar* ‘sphere, globe’, etc.) belong to this group. These nouns have different stress patterns for the genitive singular: the stress falls on the desinence of nouns when



singular desinence substituted for the dual desinence and it was then extended to other lower numerals, i.e., 3 and 4, which used to be combined with the nominative plural form. In Polish, however, lower cardinal numerals from 1 through 4 are all adjectives and agree with the nouns they modify

## 1.2 Collective numerals

Slavic collective numeral phrases are syntactically similar to those of cardinal numerals in that quantified nouns function as syntactic heads in Russian, BCS, and Polish; collective numerals behave as modifiers, which agree with the head nouns which the numerals modify. In BCS collective numerals as well as cardinal numerals do not decline in case-required positions. Although numerals are observed to decline in literary contexts, BCS numerals generally do not decline. BCS have three kinds of collectives: i) collective numeral substantives (e.g., *dvojica* '2', *trojica* '3', *četvorica* '4', *petorica* '5', etc.), ii) collective numerals (e.g., *dvoje* '2', *troje* '3', *četvoro* '4', *petoro* '5', etc.), iii) collective numeral adjectives (e.g., *dvoji(m.)/dvoje(n.)/dvoja(f.)* '2', *troji/troje/troja* 'three', etc.). Collective numeral substantives are used to indicate a group of males only, while collective numerals specify a group of mixed gender. Collective numeral adjectives are usually utilized with inanimate nouns. Polish collective numerals behave as modifiers and the nouns which the numerals modify serve as heads in syntactic respects. Polish collective numerals decline in positions requiring case and they function as modifiers. Polish is characterized by so-called virile forms typically denoting a group consisting exclusively of male persons. Polish collective numerals preclude the possibility of being used with virile forms, because they express mixed gender specification. Other details

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quantified by lower numerals, while on the stem of nouns when used in non-quantificational contexts. (Wade 2000: 214)

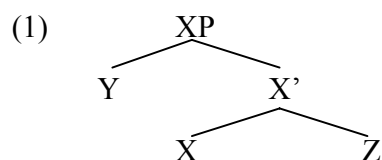
about the use and syntactic properties of collective numerals will be examined in each chapter.

## 2. THE ISSUES OF HEADEDNESS

Headedness of Slavic cardinal numerals has been a topic of controversy (Babby 1987; Corbett 1978; 1983: 215-240; Franks 1994; Mel'čuk 1985; Suprun 1959; Worth 1959). Little research, however, has been performed on collective numerals and their structural analysis. In this dissertation, we will take the position here that both cardinal and collective numerals are modifiers, whereas the nouns which the numerals modify are heads.

### 2.1 Theory of Headedness

In traditional grammar, Noun Phrase (NP) is regarded as a phrasal expansion of a noun, which has the same syntactic distribution as the head noun  $N^{\circ}$  of the phrase. Since X-bar Theory was first proposed by Chomsky (1970) and further revised by Jackendoff (1977), it is generally postulated that every constituent of a structure must be headed. Chomsky (1995: 52) elaborates the endocentric rules of X-bar Theory, with the head  $X$  of the construction projecting the dominating category  $XP$ . For example, if  $X$  is  $N$ , then  $XP$  is NP, if  $X$  is  $V$ , then  $XP$  is VP. The endocentric X-bar Theory causes the emergence of Headedness Principle.



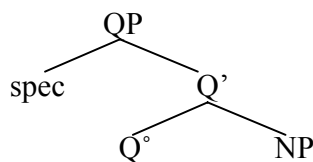
## (2) Headedness Principle

Every syntactic structure is a projection of a head word

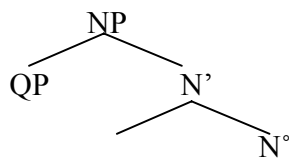
(cf. Radford 2004: 154)

According to X-bar Theory and the Headedness Principle, Slavic numerals could be analyzed as either QP-headed structure or NP-headed structure. This research will be exploring the NP-headed structure and conclude that quantified nouns are heads and the numerals are modifiers.

## (3) QP-headed structure



## (4) NP-headed structure



As shown above, example (3) illustrates that the numeral head  $Q^\circ$  has its own projection Quantifier Phrase (QP) and NP is embedded by  $Q^\circ$ , while example (4) – that the head  $N^\circ$  extends to an NP projection and QP merges with  $N'$  as a specifier of NP.

### 2.1.1 QP-headed Structure

According to X-bar Theory,  $Q^\circ$  is the head of QP, whose syntactic distribution is the same as that of NP or DP. NP can be embedded by QP as a complement. As shown in (3), the head  $Q^\circ$  governs its complement NP and receives structural case, i.e., nominative

and accusative cases. On the basis of the concept of government, the governor  $Q^\circ$  itself must not vary in form, although it determines the morphological forms of its sister constituent (Zwicky 1985). A QP-analysis does not account for the fact that we observe two different case assignment patterns, i.e., ‘heterogeneous’ and ‘homogeneous’ patterns (Babby 1985:2). The heterogeneous pattern of case assignment (5a) shows that each constituents of the numeral phrase have different cases, while the homogeneous pattern shows that all the constituents of the numeral phrase have the same case, i.e., instrumental case, assigned by the preposition *s* ‘with’ as in (5b).

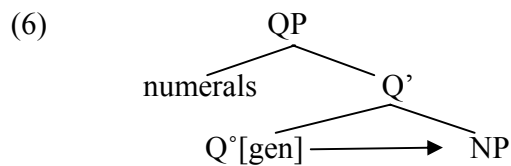
- (5) a. [*pjat'*<sub>ACC</sub> *bol'six*<sub>GEN</sub> *butylok*<sub>GEN</sub> *vina*]<sub>ACC</sub>  
           [*five*<sub>ACC</sub> *big*<sub>GEN</sub> *bottles*<sub>GEN</sub> *wine*<sub>GEN</sub>]<sub>ACC</sub>  
           ‘Five big bottles of wine’
- b. [*s pjat'ju*<sub>INSTR</sub> *bol'simi*<sub>INSTR</sub> *butylami*<sub>INSTR</sub> *vina*]<sub>INSTR</sub>  
           [*with five*<sub>INSTR</sub> *big*<sub>INSTR</sub> *bottles*<sub>INSTR</sub> *wine*<sub>GEN</sub>]<sub>INSTR</sub>  
           ‘With five big bottles of wine’

(Babby 1985:2)

Example (5a) shows that the case distribution of the quantified phrase is heterogeneous, while (5b) shows that it is homogeneous. The former occurs in direct case contexts, whereas the latter occurs in oblique case contexts.

In the QP-analysis, the head  $Q^\circ$  hosts Slavic numerals and assigns [genitive] case to its complement NPs. The position of numerals within the QP-headed structure is still open to debate. Franks (1994) extensively investigated Slavic numeral expressions, focusing on Russian, Serbian, and Polish. On the basis of Franks’ (1994) and Bailyn’s (2002) approaches,  $Q^\circ$  is a head in a numeral phrase and it assigns [genitive] case to NP regardless of whether the head  $Q^\circ$  is empty or occupied by a null head. Franks (1994:642-

45) claims that the QP is headed by an empty head and numerals are hosted on the spec-of-QP, since the QP-analysis, where numerals are hosted on Q°, cannot clarify the phrase *po pjati*<sub>DAT</sub> *rublej*<sub>GEN.PL</sub> ‘five rubles each’. Therefore, its structure is [<sub>QP</sub> *pjat*’ [<sub>Q</sub>’ [<sub>Q</sub> ∅][<sub>NP</sub> *rublej*]]]. The QP-headed structure can be represented as follows:



In addition to the structure of QP, the functions of QP in sentences are important factors to determine the headedness of Slavic numeral phrases. Franks (1994; 1995) tried to account for the syntactic property of GEN-Q with a feature-based approach, i.e., he labeled structural case [–oblique] and inherent case [+oblique], respectively. Following Babby’s (1987) *Syntactic Case Hierarchy* that lexical case overrides configurational case, Franks’s (1994) claims that Q° assigning [genitive] case to a complement NP is structural case and therefore Q is overruled by inherent case (‘lexical case’ in Babby’s terminology) from upper projections. As a result, GEN-Q is active and assigns structural [genitive] case only in the direct cases, while it is overruled by inherent case, i.e., [+oblique] case.

### 2.1.2 NP-headed Structure

Babby (1987) sheds light on the issue of case assignment and headedness of Russian numeral phrases by comparing the behavior of numerals in Old Russian with those in Modern Russian. He claimed that Q° is not a syntactic head, but N° is. Supporting Babby’s (1985b; 1987) analysis, Rappaport (2002; 2003b; 2006) tried to account for the idiosyncratic properties of Russian numeral phrases in the framework of

Concerning case assignment, Babby (1985a; 1986; 1987) succinctly defines the morphosyntactic oddity of Russian numeral phrases as *heterogeneous* and *homogeneous* patterns, which can be extended to other Slavic numeral phrases. It is observed that the heterogeneous pattern of case assignment occurs in direct cases, i.e., nominative and accusative cases, while the homogeneous pattern – in oblique cases, i.e., genitive, dative, instrumental, and prepositional cases.<sup>2</sup>

a. nominative: [pʃat' studentov] zanimalis' sportom vmeste.  
[five<sub>NOM</sub> students<sub>GEN</sub>] played sport(s) together  
'Five students played sport(s) together.'

- <sup>2</sup> The term *prepositional* case is differentiated from *locative* case in the sense that ‘prepositional case’ is named because the case is used only with prepositions. *Locative* case is used to indicate ‘a location’.

(8) The homogeneous case distribution

- a. genitive: [dlja pjati strannyx studentov]  
for five<sub>GEN</sub> strange<sub>GEN</sub> students<sub>GEN</sub>  
'For five students'
- b. dative: [k pjati strannym studentam]  
to five<sub>DAT</sub> strange<sub>DAT</sub> students<sub>DAT</sub>  
'To five students'
- c. instrumental: [s pjat'ju strannymi studentami]  
with five<sub>INSTR</sub> strange<sub>INSTR</sub> students<sub>INSTR</sub>  
'With five students'
- d. prepositional: [o pjati strannyx studentax]  
about five<sub>PREP</sub> strange<sub>PREP</sub> students<sub>PREP</sub>  
'About five strange students'

With regard to the headedness of Russian numeral phrases, there exists no consensus among linguists, although there is a prevailing opinion that numerals are not heads, at least in oblique cases (Babby 1987; Neidle 1988; Peškovskij 2001). Babby (1987 : 116) tried to explain the irregularity of Russian numeral phrases by adopting Syntactic Case Hierarchy (see (9) below) that one case overrides another case in conflict situations within the structure of Government and Binding Theory.

(9) Syntactic Case Hierarchy

LEXICAL CASE > CONFIGURATIONAL CASE (Babby 1987: 116)

This approach, unfortunately, cannot apply within the framework of the Minimalist Program, since valued features cannot be active and must be deleted by the operation Agree. In other words, in the Minimalist approach, there can be no overriding effect between conflicting cases. Details about the operation Agree will be introduced in section 3.

### **3. THE THEORETICAL BACKGROUND: SLAVIC COLLECTIVE NUMERALS**

#### **3.1 Theoretical framework**

To explain a variety of syntactic properties of subject-predicate agreement, concord, and case assignment, it is important for us to define how the syntactic operation *Agree* works, a concept we borrow from the Minimalist Program (Chomsky 1995). Agree is closely associated with the interactions between two constituents: a c-commanding head and a constituent it c-commands, i.e., a probe and a goal. These two constituents work in an asymmetrical framework, i.e., within a c-commanding relationship between them. Under the operation Agree, many formal features interact in pairs: valued and unvalued  $\phi$ -features. During a sequence of syntactic operations, Agree plays two significant roles: i) feature-sharing as a process of *Value*, and ii) structural case assignment. In the process of Agree, valued features in either a probe or a goal are copied onto a matching unvalued feature in the other and they, then both have the same values, i.e., feature-sharing occurs between the probe and the goal in a sequence of syntactic operations. After the process of feature-sharing, valued features must be deleted and they are ready for the next operations.

After a chain of syntactic derivations, the Phonological Form (PF) component operates on the basis of semantic representation given by a lexical item and then it is



‘spelled out’, that is, it provides the morphophonological and prosodic rules necessary to realize an abstract form that consists of something like *work* plus the featural specifications of [person: 3] and [number: sg.] as [WORKS]. Logical Form (LF) is the final stage of a syntactic representation. LF is a level of syntactic representation which is assumed to interface with the conceptual intentional systems of the human brain (Adger 2003; Radford 2004).

### ***3.1.1 Abstract Quantitative Case and its Spell-Out Rules***

Quantitative case is originally proposed by Rappaport (2002; 2003b) to analyze the idiosyncrasies associated with the morphosyntax of Russian numeral phrases. His theory of abstract quantitative case generating two different morphosyntactic variations – heterogeneous and homeogeneous morphosyntax – via spell-out rules extended to the Polish puzzles of numeral phrases (2003a). The abstract quantitative case theory can account for: i) the interrelationship of numeral phrases between internal structures (i.e., concord and headedness) and external contexts (i.e., homogeneous or heterogeneous morphosyntax), ii) the intermediate categorical status of numerals between nouns and adjectives, iii) the consistency of headedness of nouns in numeral phrases regardless of whether in direct case contexts or in oblique case contexts. This approach is based on the Minimalist approach (Chomsky 2000, 2001b), in which the fundamental properties of the case-agreement system are regulated by the operation *Agree*. Rappaport (2002; 2003a; 2003b) regards the different properties of homogeneous and heterogeneous morphosyntax as a result of the availability of abstract case (i.e., valued or unvalued case). Word forms are the result of spell-out rules of abstract quantitative case, which is syncretic with another case. Rappaport highlights that syntactic structures of numeral

phrases in Russian and Polish are the same; regardless of whether numeral phrases exhibit homogeneous or heterogeneous morphosyntax; in all cases, quantified nouns of numeral phrases are syntactic heads.

The adoption of pre-valued abstract quantitative case by Rappaport suggests a clue to solving the controversial morphosyntactic issues: for example, (*videt'*) \**pjati/pjat' ljudej* 'to see five people'. Quantitative case is a pre-valued abstract case of numerals, which is copied to the nouns which the numerals modify by the operation *Agree*. The numerals and the nouns share the abstract quantitative case along with other features via the operation *Agree*. In the case of higher cardinal numeral phrases, nouns are unconditionally spelled out as genitive, whereas the numerals are spelled out as 'quantitative case', which is syncretic with accusative case:

(10) Spell-Out Rules of Russian Cardinal Numerals

	Numerals	Nouns
a)	{ <i>pjat'</i> }-} → { <i>pjat'</i> } [case: quant.]	[case: gen.]
b)	{ <i>dv-</i> } → { <i>dva</i> } [case: paucal]	[case: paucal]
	{ <i>dvux</i> } [case: gen.]	[case:gen.]/___ [animacy:+],[case:acc.]

As illustrated in (10), Russian higher cardinal numerals are spelled out as in (10a), while lower numerals are spelled out as paucal case in (10b), which is syncretic with the genitive singular: e.g., *dva čeloveka* 'two people', *dva okna* 'two windows', and *dve sestry* 'two sisters'. Lower numerals are affected by the Animacy Rule<sup>3</sup>, while higher numerals are not, because higher numerals themselves have neither animacy nor

<sup>3</sup> Animacy Rule (Genitive=Accusative): For masculine animate nouns belonging to masculine declension, *animate* nouns have accusative case which is homophonous with the *genitive* case in the singular paradigm (Acc.=Gen.); *inanimate* nouns have an accusative case, which is homophonous with the *nominative* case (Acc.=Nom.)

nominative case (2002: 335; 2003b: 12). The pre-valued case of higher numerals is directly spelled out as quantitative case only in direct cases. Homogeneous morphosyntax associated with oblique cases is the result of unvalued case, which renders lexically assigned inherent case to be valued onto head nouns directly from inherent case assigners.

Spell-out rules for Russian collective numerals differ from those of higher cardinal numerals in that the declension paradigm of collective numerals stands under the influence of the Animacy Rule. In direct object positions higher numerals do not have the animacy feature, while collective numerals have that feature: for example, [*ètix pjat'*<sub>ACC</sub> *ženščin*]<sub>ACC</sub> 'these five women' vs. [*ètix pjateryx*<sub>GEN</sub> *mužčin*]<sub>ACC</sub> 'these five men'. The accusative of *pjat'* 'five' is identical to the nominative case, whereas the accusative of *pjatero* 'five' is identical to the genitive case. The spell-out rules for Russian collective numerals are as follows:

(11) The Spell-Out Rules for Russian Collective Numerals

	<u>Numerals</u>	<u>Nouns</u>
a)	Pre-valued [case: quant.] → [case: quant./gen.]	[case: gen.]/___[animacy: +]
b)	Pre-valued [case: quant.] → [case: quant.]	[case: gen.]/___[animacy: -]
c)	Unvalued case [case: ] → [case: ]	[case: ]/___elsewhere

The spell-out rule (11a) applies to collective numerals with the [animacy: +] feature: the pre-valued abstract case is spelled out either in the quantitative case in subject positions or in the accusative case in direct object positions, which is syncretic with the genitive case of nouns. Collective numerals with inanimate nouns are spelled out as in (11b), whose use is restricted to a few groups: pluralia tantum nouns, some nouns indicating young animals, nouns of paired objects, etc. Furthermore, collective numerals acquire

case lexically assigned from inherent case assigners as in (11c). In this case, the unvalued case feature enables homogeneous morphosyntax to occur by allowing lexical case to be directly valued onto head nouns. These spell-out rules produce grammatical constructions of collective numeral phrases: e.g., *ja videl' [dvoix<sub>GEN</sub> detej<sub>GEN</sub>]* 'I saw two children.', *studenty kupili [troe<sub>QUANT</sub> sanej<sub>GEN</sub>]*. 'Students bought three sledges.', *ko mne prišlo [četvero<sub>QUANT</sub> studentov<sub>GEN</sub>]* 'Four students came to me.', and *podaroki [dlja dvoix<sub>GEN</sub> detej<sub>GEN</sub>]* 'presents for two children', etc.

As discussed above, Russian numerals are modifiers, while the nouns which the numerals modify are the heads of the phrases. That is, major factors associated with the spell-out rules are based on semantic and formal features of nouns. In contemporary BCS, numerals do not decline even in oblique case contexts. However, BCS has a commonality with Russian in that nouns are heads. Polish collective numerals are similar to those of Russian and BCS in that Polish numerals are also modifiers and nouns are heads. In this dissertation, Russian collective numerals will be investigated in Chapter Two, BCS collective numerals – in Chapter Three, and Polish collective numerals – in Chapter Four.

### 3.2 Case Assignment

Case is a formal feature that marks nouns. Case assignment is theoretically defined via the concept *Case Filter* first suggested by Chomsky and Lasnik (1977).

#### (12) Case Filter

Every phonetically realized NP must be assigned (abstract) Case.

(\*NP if NP has phonetic content and has no Case.)

(Chomsky 1981: 49; 1995: 304-305; Rouveret and Vergnaud 1980)

Case assignment is the requirement for NPs to be visible for theta-role marking. Case realization is closely related to theta-roles in that case is a tool to mark the semantic relationship between nouns and a verb, namely between dependents and a head. Focusing on the relationship between dependents and their head, Blake (2001: 1) argues that “case is a system of marking dependent nouns for the type of relationship they bear to their heads.” Natural languages opt for their own ways to encode case either with structurally decided syntactic positions, or with overt morphological case endings. English belongs to the former language group, while Russian with strong inflection – to the latter group.

### ***3.2.1 Structural case assignment***

Structural case is represented by nominative and accusative cases. Structural case assignment triggers heterogeneous morphosyntax, while inherent case assignment – homogeneous morphosyntax in Slavic numeral phrases. This dissertation highlights the importance of the operation Agree, which licenses the occurrence of either homogeneous or heterogeneous pattern of case assignment according to the availability of pre-valued abstract case. Case realization of numerals and nouns results from spell-out rules by morphology of features which have been assigned in the syntax via Agree. Unvalued case feature of nouns permits lexical case to be valued on noun heads that other modifiers must agree with. That is, the lack of pre-valued abstract quantitative case produces homogeneous morphosyntax in Slavic numeral phrases.

### ***3.2.2 Inherent case assignment***

Inherent case assignment is often observed in prepositional phrases with numerals. Prepositions have their specific case values and assign inherent case to their

complements, i.e., NPs. According to Babby's (1987: 115-16) Syntactic Case Hierarchy, lexical case overrides configurational case (cf. syntactic case). For example, a cardinal numeral phrase *pjat' znamenityx professorov* 'five professors' and a collective numeral phrase *dvoe detej* 'two children' both exhibit heterogeneous patterns, but the heterogeneous pattern of case assignment turns into a homogeneous pattern when embedded into PPs (Prepositional Phrases), e.g., *k pjati znamenitym professoram*<sub>DAT</sub> 'to five famous professors' and *o dvoix*<sub>PREP</sub> *detjax*<sub>PREP</sub> 'about two children'. Under homogenous case assignment, numerals are considered as modifiers, whereas nouns – as heads (Neidle 1988; Peškovskij 2001).

### 3.3 Agreement (Concord)

It is generally assumed that attributive modifiers must agree with their modified heads of phrases in a series of  $\phi$ -features, i.e., [number: ] and [gender: ] as well as [case: ] feature (Anderson 1982: 574). That is, this operation requires a formal relationship between syntactic elements, whereby one constituent requires a corresponding form of the other. Traditionally the agreement between attributive adjectives and head nouns is called 'Concord'. Zwicky (1985: 8-9) highlights the importance of concord by setting up a criterion of 'determinant of concord'. In the Slavic languages, the criterion of determinant of concord is of great importance, because there are many instances of the occurrence of concord: attributive modifiers (e.g., adjectives, demonstrative pronouns, possessive pronouns, and even numerals) agree with head nouns. Demonstrative pronouns have the same morphological endings as those of adjectives, and, therefore, they decline as adjectives do. Demonstrative pronouns serve to specify things in the world via their proximity to the deictic center, like proximal demonstratives 'this/these' and distal

demonstratives ‘that/those’. Possessive pronouns and numerals are also agreement targets, which agree with their heads, i.e., agreement controllers.

Slavic adjectives lack their own independent  $\phi$ -features and therefore their  $\phi$ -features are always determined by those of head nouns of phrases they modify during derivations (Isačenko 1965; Rappaport 2003b; Timberlake 2004). That is, adjectives never decline independently without their head nouns, which are the source of all formal features. Those features of adjectives must be received by the operation *Agree*. For instance, given that a Russian noun *mašina* ‘a car’ is case-valued as [nom] case by T°, the noun *mašina* ‘(a) car’ has a third person, singular, feminine, inanimate features and its case feature is [nominative], i.e., it has the following feature bundles: [person:3], [number: sg ], [gender: f ], [animacy: –] from the lexical item, and the case value [nom]. Its spell-out form is [mašina]. Now assume that an attributive adjective {*nov-*} ‘new’ was chosen to modify the noun *mašina*.<sup>4</sup> Unlike nouns, adjectives must have their uninterpretable features valued via feature-copying between nouns and adjectives. A concrete example is needed to account for this process. Under the demand of concord, all the uninterpretable features of the adjective *nov-* ‘new’ must be filled with appropriate values from the head noun that has interpretable features and case, and then finally the interaction of feature-sharing becomes inactive.

### (13) Agree in Adjectives plus Nouns

Attributive Adjective (modifier)		Noun (head)	Spell-Out Form
<i>nov-</i>		<i>mašina</i> ‘(a) car’	→ <u>novaja</u> mašina
[number: ]	←	[number: sg]	[number: sg]
[gender: ]	Agree	[gender: f ]	[gender: f ]
[case: ]	Copy	[case: nom]	[case: nom]

<sup>4</sup> {*nov-*} is a form of minimal lexemic stem, which gives only semantic information of the lexicon without any formal features.

In (13), the core mechanism is that an agreement controller, i.e. the head of the phrase, searches for one or more than one target and at the same time the controller makes the targets conform to the value of the controller. In the case of *novaja mašina* ‘(a/the) new car’ the *mašina* is the controller, while *novaja* is its target. The properties of the controller, i.e., [number: sg], [gender: f], and [case: nom], are copied into those of the target. As a result, [novaja mašina] is the final spell-out form.

### 3.4 Subject-Predicate Agreement

Pesetsky and Torrego’s (2001: 361) claim that ‘the nominative case is [ $uT$ ] on D’, subject-predicate agreement is the result of the interaction between  $T^\circ$  and  $D^\circ$ . It is natural that a subject in the nominative case triggers subject-predicate agreement in a sentence. The major issue of subject-predicate agreement is closely related to the headedness of numeral phrases. In the traditional ways, subject-predicate agreement is supposed to involve Specifier-Head Agreement between  $T^\circ$  and its specifier. However, this approach confronts theoretical and empirical problems in an expletive sentence structure like “*there are thought likely to be awarded several prizes*” (Radford, 2004: 281). To solve this problem, Chomsky employs the mechanism of agreement with the concept of C-COMMAND relationship by means of *feature-checking* between constituents with either uninterpretable or interpretable features. Based on the assumption that c-command is a major tool for syntactic operation,  $T^\circ$  must be in agreement with DP/NP which it c-commands in  $\phi$ -features as well as case feature. Later, Chomsky (1995; 1998; 2001a; 1999) introduces the terminology Probe and Goal. Probe is a head searching for a matching goal. The goal is a category the probe c-commands under the operation Agree.



Rappaport (2000: 9-11) emphasizes that the operation *Agree* works by means of one value and the other unvalued, and that “one effect of *Agree* is to copy the value of any unvalued feature in either the probe or goal onto a matching unvalued feature in the other.”

#### **4. ORGANIZATION**

The introduction of this dissertation has surveyed the theoretical background on which the following chapters can be examined. The rest of the dissertation is organized in the following order:

Chapter Two investigates Russian collective numerals. The basic information about the Russian collective numerals is introduced on the basis of ‘the four-fold scheme of Slavic plurals’ by Stankiewicz (1986: 155) and the difference between cardinal numerals and collective numerals is explained briefly. The general use of collective numerals is discussed and analyzed according to three criteria: i) semantic analysis, ii) morphological analysis, and iii) syntactic analysis. The functioning of *Agree* in numeral phrases will be discussed. Most of all, determination of the syntactic headedness of the Russian collective numerals can be explicated based on the following: i) the genitive-accusative, ii) participles, iii) attributive modifiers (e.g., demonstrative pronouns, possessive pronouns, adjectives, numerals, etc.), and iv) autonomous use of collective numerals. Case assignment is analyzed with ‘abstract’ quantitative case by Rappaport (2002). According to Rappaport, heterogeneous case marking occurs with a pre-valued case feature on the noun, while homogeneous case marking reflects an unvalued case feature on the numeral, allowing for the numerically-quantified nouns to receive a single case from a higher head assigning inherent case.

Chapter Three discusses BCS collective numerals within the same analytical frame as Russian. The BCS collective numerals are characterized by three different forms of numerals having collective meanings: i) collective numerals (e.g., *dvoje* ‘two’, *troje* ‘three’, *četvero/četvoro* ‘four’, *petoro* ‘five,’ etc.), ii) collective numeral adjectives (e.g., *dvoji*(m.)/*dvoje*(n.)/*dvoja*(f.) ‘two’), and iii) collective numeral substantives (e.g., *dvojica* ‘two’, *trojica* ‘three’, *četvorica* ‘four’, *petorica* ‘five’, etc.). In addition, the indeclinability of the BCS numerals is in significant contrast to Russian and Polish numerals in case-required positions. After a brief explanation of the general use of BCS numerals, BCS collective numerals are analyzed in the same three areas – semantics, morphology and syntax – as in Russian. BCS numerals are modifiers, while nouns of numeral phrases are syntactic heads. As mentioned before, quantitative case is a pre-valued abstract case feature, which is copied onto nouns and spelled out. In BCS, indeclinable numerals can be analyzed as numeral phrases where the spell-out form of abstract quantitative case is syncretic with the nominative case and never declines even in case-required positions.

Chapter Four examines Polish collective numerals. One characteristic of Polish is virile forms in the plural, which indicate a group of males only. Polish collective numerals denote that members of a group are of mixed gender. Virile forms of cardinal numerals specify a group of males only. Virility applies only in the plural paradigm of nouns, while animacy applies in the singular paradigm. The headedness of Polish numerals are not different from Russian and BCS in that numerals serve as syntactic heads. The distinction of the two – lower cardinal numerals (2, 3, 4) vs. higher cardinals and collective numerals – is reflected in subject-predicate agreement in that the former

always trigger plural agreement with predicates, whereas the latter – neuter singular agreement, or default.

## Chapter Two: Russian Collective Numerals

### 1. INTRODUCTION

Less attention has been paid to the Russian collective numerals than to the cardinal numerals. The collective numerals, however, express an additional meaning that the cardinal numerals cannot convey, for instance, totality or cohesiveness of entities as an aggregate. Collective numerals need to be examined from a semantic and syntactic perspective, since they have semantic and syntactic peculiarities depending on the nouns that they modify.

From a syntactic point of view, Slavic numeral phrases have been a major topic of the debate on headedness, which encompasses a series of grammatically significant issues in the following aspects: i) external agreement (Subject-Predicate Agreement), ii) internal agreement (Concord), iii) case assignment, and iv) headedness, that is to say, whether a category Quantifier Phrase is present in Russian numeral phrases as a functional projection. Regardless of the presence of DP projection, which is the locus of a ‘referential feature’ (Longobardi 1994), it is a controversial matter whether Russian numerals themselves can serve as heads of the numeral phrases.

On the basis of Babby’s (1985b) claims that quantified nouns are the heads of the Russian numeral phrases, Rappaport (2003b) proposed that heterogeneous case marking results from a pre-valued case feature on the nominal, while homogeneous case marking – from an unvalued case feature allowing the quantified nominal to receive an inherent case from a higher, lexical-case-assigning head. His analysis rests on the assumption that pre-valued abstract *Quantitative Case* (QC) is spelled out by syncretism with the

nominative/accusative case for inanimate nouns and the genitive case for animate nouns via morphological rules.

This chapter will give a descriptive account of the use of the Russian collective numerals and the linguistic analysis of their semantic and syntactic properties resulting from extending Rappaport's (2002) approach to the collective numerals in Russian on the basis of the mechanism of *Agree* (Chomsky 1995).

### **1.1. The Definition of the Collective Numeral**

The Russian collective numerals differ from the cardinal numerals in that the former emphasize 'the totality' or 'the aggregate as a whole', while the latter – 'the individuated quantity' (Bulaxovskij 1958; RG-I 1982; Suprun 1959; Timberlake 2004; Vinogradov 1947). According to Stankiewicz (1986: 153-170), Slavic plurals can be represented as the four types of plurals in the frame of 'a four-fold scheme': i) simple plural, ii) counted plural, iii) collective plural, and iv) counted collective plural. He emphasizes that the simple plural is opposed to the counted plural and the collective plural, whereas the counted collective plural is doubly marked, for it combines the concept of counted plurality with that of plurality as a cohesive whole. Stankiewicz's (1986) four-fold scheme is represented in the table (1) below:

(1) Stankiewicz's Four-Fold Scheme of the Russian Plurals

Russian	<i>Simple Plural</i>	<i>Counted Plural</i>
	<i>studénty</i> 'students' <i>sěstry</i> 'sisters' <i>loskutý</i> 'scraps of paper' <i>klokí</i> 'tufts, shreds, rags' <i>telěнки</i> (dial.) 'calves'	<i>(tri) studénta</i> 'three students' <i>(tri) sestry</i> 'three sisters'
	<i>loskút'ja</i> 'rags' <i>klóč'ja</i> 'tatters' <i>teljáta</i> (dial.) 'calves'	<i>pjátero studéntov</i> 'five students'
	<i>Collective Plural</i>	<i>Counted Collective Plural</i>

(Only Russian data excerpted from Stankiewicz, 1986: 155)

The simple plural is the most productive category of noun, whereas the counted plural and the collective plural are the marked forms in all Slavic languages (Stankiewicz 1986: 153-167). Russian has few collective plurals, whereas Bosnian/Croatian/Serbian (henceforth, BCS) has 'a full complement of the marked forms' (Stankiewicz 1986: 155). Furthermore, Polish does not have counted plurals as a marked category. Stankiewicz pointed out the characteristics of the collective numerals, which can quantify the collective plural. In addition, he mentioned that Slavic languages have the concept of collective numerals that perform 'a double function': i) they quantify nouns with an inherent collective meaning, i.e., *tróe detej* 'two children' and *čétvero rebját* 'four lads' etc., and ii) they yield a contrasting semantic distinction between the non-collective meaning expressed by simple and counted plurals, and collective plurality expressed by collective numerals, i.e., *tri soldata* vs. *troe soldat* 'three soldiers', *četyre syna* vs. *čétvero synovej* 'four sons', etc.

## 1.2. The Formation of the Collective Numeral

Russian, Polish, and BCS share the manner by which they form the collective numerals: adding suffixes to the stems of the cardinal numerals: *-oj(e)* for 2 and 3, *-er(o)/-or(o)* for 4 and higher (RG-I 1982; Suprun 1959, 1961; Sussex and Cubberley 2006). Unlike those in Contemporary Standard Russian (henceforth, CSR), the collective numerals denoting values ‘above 10’ used to be in wide use in Old Russian (henceforth, OR), e.g., *i ovec sto tridcatero*<sup>5</sup> ‘(and) 130 sheep’ (Ivanov 1990; Kozyreva and Xmelevskaja 1972: 64-67; Suprun 1959) and could be combined with any noun regardless of gender or animacy etc., which is not the case in CSR (Ivanov 1990: 311).

The Russian collective numerals (*sobiratel’nye količistvennye*) are derived from Common Slavic (CS) cardinal numerals by adding a few suffixes *-oje/-ero/-oro* to either the cardinal stems (e.g., *dv-oj-e* > {*dv-oj-o*}, *tr-oj-e* > {*tr-oj-o*}) or ordinal stems (e.g., *čtv-er-o* ‘four’): *dv-oje* (dv-a), *tr-oje* (tr-i), *čtv-ero* (čet(y)r-e), *pjat-ero* (pjat’-ø), *šest-ero* (šest’-ø), *desjat-ero* (desjat’-ø), etc. Kozyreva and Xmelevskaja (1972: 64-66) claim that unlike other forms, *četvero/četvoro* ‘4’ is a non-suffixed form: *četver-o*. The Russian collective numerals restrict their uses to 9 numbers only: from 2 up to 10 i.e., *dvoe* ‘2’, *troje* ‘3’, *četvero* ‘4’, *pjatero* ‘5’, *šestero* ‘6’, *semero* ‘7’, *vos’mero* ‘8’, *devjatero* ‘9’, *desjatero* ‘10’.

The use of the suffixes *-oje/-oro/-ero* for collective numerals is verified by CS evidence, which is observed in Old Church Slavonic (henceforth, OCS) texts. In OCS period, the suffixes *-ѡи/-ѡр(-ѡр)* are added to cardinal numerals to make collective numerals: for example, *дѡѡи* ‘2’, *трѡи* ‘3’, *четверѡ(четворѡ)* ‘4’, *пѡтерѡ(пѡторѡ)* ‘5’ up to *дѡсѡтерѡ(дѡсѡторѡ)* ‘10’. These numerals had the same declension as that of

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<sup>5</sup> Akty Severo-Vostočnoj Rusi No. 71

pronominal declension<sup>6</sup>: gen. *дѣвоукоу*, dat. *дѣвоукомѹ* and so forth (Lunt 2001; Xaburgaev 1974: 251).

Vinogradov (1947: 308) mentioned that Miklošič (1852; 1868) had regarded these contemporary forms *dvoe* ‘2’, *troje* ‘3’, etc. as distributive (*razdelitel’nye*)<sup>7</sup> when they are used with inanimate nouns. In CSR, especially when they are used with pluralia tantum nouns, the collective forms *dvoe* ‘2’, *troje* ‘3’, *četvero* ‘4’ etc. acquire the predominant meaning of ‘distributiveness’ rather than ‘collectivity’. In addition, the usage of *dvoe* ‘2’, *troje* ‘3’, etc. was different from that of *dvoi* ‘2’, *troi* ‘3’, etc. Vinogradov (1947) emphasized that the former forms are used with animate nouns, whose case is in the genitive, while the latter – with inanimate nouns which the numerals, e.g., *dvoi* ‘2’, *troi* ‘3’, etc. agree with in number, gender, and case: For instance, *dvoe tovariščej* ‘two comrades’, *dvoe slug* ‘two servants’ vs. *dvoi sapogi* ‘two boots’, *dvoi ramy* ‘two frames’, and *dvoi očki* ‘two pairs of glasses’.

- (2) *Двои*                      часы                      золотые  
two<sub>COLL.NOM.PL</sub> watches<sub>NOM.PL</sub> gold<sub>NOM.PL</sub>

‘Two watches are gold.’

- (3) На самом тронѣ... поставлены были ... *двои*                      креслы.<sup>8</sup>  
On the throne                      were placed                      two<sub>COLL.NOM.PL</sub> arm-chairs<sub>NOM.PL</sub>

‘Two arm-chairs were placed on the throne.’

<sup>6</sup> In OCS the declension of impersonal pronouns is defined as pronominal declension, which turns out to be either hard variants, i.e. *тъ*(m.)/*та*(f.)/*то*(n.), *оуѣ*/*оуа*/*оуо*, *оуѣ*/*оуа*/*оуо* or soft variants, i.e. *\*и*(j-ъ)/*\*ѣ*(j-а)/*\*ѣ*(j-е), *ѣкъ*/*ѣка*/*ѣко*, *вѣѣкъ*/*вѣѣка*/*вѣѣко* etc.

<sup>7</sup> Miklošič, 1868 *Vergleichende Grammatik der slavischen Sprachen* (IV, chapter III)

<sup>8</sup> [Slovar’ russkogo jazika 18 v.](#)



The old forms, i.e., *dvoi* '2', *troi* '3', *četvery* '4', etc., were later replaced with the new generalizing forms i.e., *dvoe* '2', *troe* '3', *četvero* '4', etc. Aksakov ascertained that although the old forms *dvoi* '2', *troi* '3', *četvery* '4' etc. had died out, the two forms of the old version *dvoi* '2', *troi* '3' and the new versions *dvoe* '2', *troe* '3', were being utilized simultaneously as colloquial variants in CSR. (Bulaxovskij 1958; Vinogradov 1947).

In CSR, pluralia tantum (PT) nouns, such as *vorota* 'gate', *sutki* 'twenty-four hours, day and night', and *očki* '(a pair of) glasses', etc., must be quantified by collective numerals. In this case, it is impossible to replace the collective forms with cardinal forms such as *dva/dve* '2', *tri* '3', and *četyre* '4', etc., because the cardinal numerals cannot quantify the inherent plural meaning and the cardinality of the item at the same time.

Unlike 2-4, collective numerals indicating 5 or above can be replaced by cardinals like *pjat* '5', *šest* '6', *sem* '7', etc. In this case, cardinal numerals are preferred to the collective numerals. Especially in oblique cases, collective numerals with inanimate nouns cannot be utilized and must be replaced by cardinal numerals: for example, *pri pomošči dvux ščipcov* 'with (the help of) two pairs of tongs', *s tremja nožnicami* 'with three pairs of scissors', *na četyrex vorotax* 'at (the) four gates', *s sem'ju dverjami* 'with seven doors', etc. (Vinogradov 1947)

### 1.3. Diachronic Development of the Collective Numeral

The Russian collective numeral system underwent a process of stabilization during the 18<sup>th</sup> - 19<sup>th</sup> centuries with the loss of the plural forms of collective numerals by the first half of 19<sup>th</sup> century. The old forms of collective numerals, e.g., *dvoi* '2', *troi* '3',

*četvery* ‘4’, etc., were replaced by their neuter forms, i.e., *dvoe* ‘2’, *troe* ‘3’, *četvero* ‘4’, etc., in the direct case for all genders (Suprun 1959:44-46, 96-99).

In the Old Russian (OR) period, collective numerals follow either the *nominal declension* (*četvero* ‘4’ and above) or the *pronominal declension* (*dvoe* ‘2’ and *troe* ‘3’) (Ivanov 1990: 310-311; Kuznecov 1953: 189).

- (4) a. **СѹЩЕСТВО НЕРАЗДѢЛЬНО И ТРИСѢСТВНО ЕДИНОГО ТРОЕГО БА**  
существо неразделяемо и состоящее из единого троих бога  
essence inseparable and consists of one<sub>CARD</sub> Triune<sub>COLL</sub> God  
‘The essence is inseparable and consists of one Triune God’

(Novgorodskij Menaion 1096)

- b. **ТРОЕ ЕСТЬ НЕ МОШТНО МИ РАЗОУМѢТИ, А ЧЕТВЕРА НЕ РАЗОУМѢЖ**  
Трое есть не мощно мне разуметь, а четверо не разумею  
three<sub>COLL</sub> impossible (to) me to understand, but four<sub>COLL</sub> (I) don’t understand  
‘It is impossible for me to understand three, but I do not understand four.’

(Svjatoslav’s collection 1073)

In addition, these collective numerals not only had the singular form, but also the plural form of declensional paradigms, which is not the case with Russian numerals in CSR.

- (5) **СѢЩЕ СѹБО СЖѢ СЪЛОЖЕНЫ ВЪ ПАТЕРНИЦАХЪ КЪНИЖНЫИХЪ ЧЕТВОРѢХЪ**  
Так тогда сложены в пятерницах книжных четверых  
in that way then compiled in collection literary four<sub>COLL</sub>  
‘Then they are compiled in four literary collection in that way.’

(Svjatoslav’s collection 1073)

Today the plural form is found only in the oblique cases; e.g., *dvoix* ‘2’, *troix* ‘3’, *četveryx* ‘4’, etc.

#### 1.4. Declension of Collective Numerals

Both collective numerals *oba*<sup>9</sup> ‘both’, *dvoe* ‘two’, *troe* ‘three’, *četvero* ‘four’, etc., and indefinite quantifiers (*neopredelennye čislitel’nye*)<sup>10</sup>, take morphological case forms of the plural inflection. In CSR collective numerals in *-oe*, e.g., *dvoe* ‘2’ and *troe* ‘3’, collective numerals in *-ero*, e.g., *četvero* ‘4’, *pjatero* ‘5’, etc., have plural pronominal endings in the oblique cases, i.e., gen. *dvoix/troix/četveryx*, dat. *dvoim/troim/četverym*, and instr. (*s*) *dvoimi/troimi/četverymi*, etc.

##### (6) Declension Paradigm

	SOFT DECLENSION	HARD DECLENSION
N	<i>dvo-e</i>	<i>četver-o</i>
G	<i>dvo-ix</i>	<i>četver-yx</i>
D	<i>dvo-im</i>	<i>četver-ym</i>
A	= nom.( <i>inanimate</i> ) or gen.( <i>animate</i> )	
I	<i>dvo-imi</i>	<i>četver-ymi</i>
P	<i>o dvo-ix</i>	<i>o četver-yx</i>

With regard to their grammatical properties, collective-distributive (*sobiratel’no-razdelitel’nye čislitel’nye*) numerals are either pronouns (e.g., *dъvoe*, *oboe*, *troe*) or adjectives (e.g., *četvero*) (Suprun 1961:21-23). In Old Church Slavic (OCS) collective-distributive numerals are observed both in the singular and in the plural. Collective-

<sup>9</sup> *Oba/obe* ‘both’ is regarded as a collective numeral, but not a cardinal numeral, because it follows the same declension paradigm as collective numerals, e.g. gen. *oboix/obeix*/dat. *oboim/obeim*, instr. *oboimi/obeimi*, prep. *oboix/obeix*. *Ruskaja Grammatika* (1960, Vol.I, pp.378-380).

<sup>10</sup> *mnogo* ‘much, many’, *nemnogo* ‘a little, some’, *skol’ko* ‘how many, how much’, *skol’ko-nibud’* ‘any (amount)’, *skol’ko-to* ‘that (amount)’, *neskol’ko* ‘several, few, some’, *stol’ko* ‘so much, so many’, *stol’ko-to* ‘that much, that many’

distributive numerals *oboe* ‘both’, *dъvoe* ‘2’, *troe* ‘3’ had a pronominal declension, while *četvero/četvoro* ‘4’ and higher collective numerals had an adjectival declension (Suprun 1961: 59-60). Suprun (1961: 43-60) presents evidence for pronominal declension paradigms. The declension forms of *oboe* ‘both’, *dъvoe* ‘two’, *troe* ‘three’ were found, while no declensional forms of *četvero/četvoro* ‘four’ are found in OCS texts. Its declension, however, can be observed in redacted OCS texts as in (7).

(7) Declensions of Collective Numerals in OCS

		PRONOMINAL DECLENSION	NOMINAL DECLENSION <sup>11</sup>
Singular	Gen.	ОБОЮГО, ДВОЮГО	ЧЕТВОРА
	Dat.	ОБОЮМОУ	ДЕСЯТОРОУ
	Prep	О ОБОЮМЪ	ВЪ ЧЕТВЕРѢ
Plural	Gen.	ОБОИХЪ, ДЪВОИХЪ	ЧЕТВЕРЪ
	Acc.	ОБОЯ	---
	Instr.	ОБОИМИ, ДВОИМИ	ЧЕТВОРѢХ

#### 1.4.1. *Pluralia Tantum*

Pluralia tantum (PT) nouns are nouns which lack singular forms. They refer not only to nouns with plural component parts, i.e., *brjuki* ‘pants’, *očki* ‘glasses’, *nožnicy* ‘scissors’ etc., but also to nouns denoting semantically singular entities, i.e., *časy* ‘watches’, *šči* ‘cabbage soup’, *sutki* ‘24 hours, day’, etc. (Isačenko 1965; Suprun 1959; Sussex and Cubberley 2006; Timberlake 2004).

PT nouns are quantified by collective numerals and cannot be quantified by cardinal numerals, because collective numerals can perform ‘double marking’, that is, when quantifying PT nouns, collective numerals can express the two things: i) the

<sup>11</sup> Nominal declension is equivalent to Lunt’s ‘two-fold declension’, *Old Church Slavonic Grammar* (2001).

plurality of component parts, or the paired object of PT nouns, and ii) the singular entities semantically denoted by PT nouns. These singular entities can be numerically quantified by collective numerals.

Unlike animate nouns, inanimate nouns require the use of cardinal numerals, especially in the oblique cases, as in (8) below. The collective numeral *dvoe* ‘two’ stands only in the direct cases. In other words, collective numerals are optionally used with animate nouns, whereas collectives are required in the direct cases and impossible in the oblique cases. Furthermore, higher cardinal numerals are preferred with these inanimate PT nouns even in the direct cases, e.g., *pjat’ sutok* vs. *pjatero sutok* ‘five days and nights’.

(8) Declension Paradigm of Collective Numerals

	Animate Male Noun	Pluralia Tantum Noun (inanimate)
N	<i>dvoe mal’čikov</i>	<i><u>dvoe</u> sutok</i>
G	<i>dvoix mal’čikov</i>	<i>dvux sutok</i>
D	<i>dvoim mal’čikam</i>	<i>dvum sutkam</i>
A	<i>dvoix mal’čikov</i>	<i><u>dvoe</u> sutok</i>
I	<i>dvoimi mal’čikami</i>	<i>dvumja sutkami</i>
P	<i>dvoix mal’čikax</i>	<i>dvux sutkax</i>

As seen in (8) above, the direct cases of inanimate PT nouns are syncretic with the nominative case of animate nouns. In the declension paradigm, the oblique cases of the inanimate PT nouns are different from that of animate PT nouns in that the oblique cases of the inanimate PT nouns are replaced by those of the cardinal numeral equivalents to the value of the collective numeral *dvoe* ‘two’. The collective numeral *dvoe* ‘2’ can be found only in the direct cases.

To explain the lexical meanings of nouns, this research will take advantage of Minimal Lexical Representation (henceforth, MLR)<sup>12</sup>, which is proposed by Rappaport (2005, 2006, 2007). Rappaport (2007: 180) displays a chart of MLR containing a minimal set of  $\phi$ -features determined by the semantic information of lexical items.

The chart of MLR consists of two sets of features: Referential features (R-features) and Formal features (F-features). R-features are valued by the semantic properties of a lexical item, while F-features are valued by values of R-features, or by phonological spell-out forms via morphology. The inventory of MLR for BCS nouns devised by Rappaport (2007) is represented as the following:

(9) Minimal Lexical Representation

<i>Referential features</i>	<i>Formal features</i>
[cardinality: sg/pl]	[number: sg/pl]
[animal: +/- ]	[animate: +/- ]
[sex: male/female]	[gender: masc/fem/neut]
	[declension class: Im/In/II/III] <sup>13</sup>

(Rappaport 2007: 180)

In addition, Rappaport (2007) shows the four default lexical rules to identify the feature-valuing correlations between R-features and F-features as follows:

(10) Four Default Correlations

- a) [cardinality:  $\alpha$ ]  $\rightarrow$  [number:  $\alpha$ ]

<sup>12</sup> This approach to the description of inherent meaning and features was made by Rappaport 2006.

<sup>13</sup> There are four declension classes for nouns in CSR: I(a,b), II, III(a, b, c) and IV, where masculine nouns in a consonant belong to Ia; neuter nouns – Ib; feminine nouns, dual gender nouns, and some masculine nouns ending in –a belong to II; feminine nouns in-ь, neuter nouns in-мя, the only masculine noun *put* ‘way, path’ belong to IIIa, IIIb, IIIc respectively; Indeclinable neuter nouns belong to IV (Timberlake 2004).

- b) [animal:  $\alpha$ ]  $\rightarrow$  [animate:  $\alpha$ ]
- c) i. [sex: male]  $\rightarrow$  [gender: masc.]  
 ii. [sex: female]  $\rightarrow$  [gender: fem.]
- d) i. [gender: masc.]  $\rightarrow$  [declension class: Im]  
 ii. [gender: neut.]  $\rightarrow$  [declension class: In]  
 iii. [gender: fem.]  $\rightarrow$  [declension class: II]  
 iv. [declension class: III]  $\rightarrow$  [gender: fem.] (Rappaport 2007: 180)

As shown (10a-c), it is obvious that R-features of real world referents determine F-features, which are associated with morphosyntactic operations. As in (10d), however, the correlation between gender and declension class (DC) is not always in one way: example (10d-iv) shows that [declension class: III] determines [gender: fem] feature, while (10d-i-iii) shows that [gender: ] feature determines [declension class: ].

The chart of MLR in (11) below is another version of MLR.<sup>14</sup> This MLR chart displays a series of features, which are valued by the inherent meaning of lexical items.

(11) Minimal Lexical Representation (MLR)

/očk- / ‘glasses’	
Meaning	Noun
<b>R-features</b>	<b>F-features</b>
	[declension class: ]
[animal: – ]	[animacy: – ]
[sex: ]	[gender: ]
[personal: ]	([virile: ]) <sup>15</sup>
[cardinality: ]	[number: pl ]

<sup>14</sup> The chart of MLR is introduced in class of Russian Noun by Rappaport (Fall 2007).

<sup>15</sup> The [personal: ] feature distinguishes animals from persons. There is no virility in CSR. I, however, added this feature to explain the difference between people and animals. This feature helps to explain the tendency that masculine nouns are preferred with collective numerals to feminine nouns and personal nouns – to impersonal nouns. Later on, Polish secondary gender and the Animacy Rule can be analyzed with this feature.

The chart of MLR consists of two sets of features: R-features are associated with the semantics of lexical items, while F-features are associated with grammatical operations. For instance, a PT noun *očki* ‘glasses’ has an inherently plural meaning and thus its grammatical form is plural, because they consist of two lenses. The number of plural-only nouns can be counted regardless of the inherent meaning of the item. That is, as represented in (11), the [number: ] feature is marked in the plural, because the noun *očki* ‘a pair of glasses’ is a PT noun. This process of the [number] feature valuation for PT nouns is different from that of normal nouns, whose [cardinality: ] feature is responsible for the corresponding [number: ] feature.

## 2. THE GENERAL USE OF COLLECTIVE NUMERALS

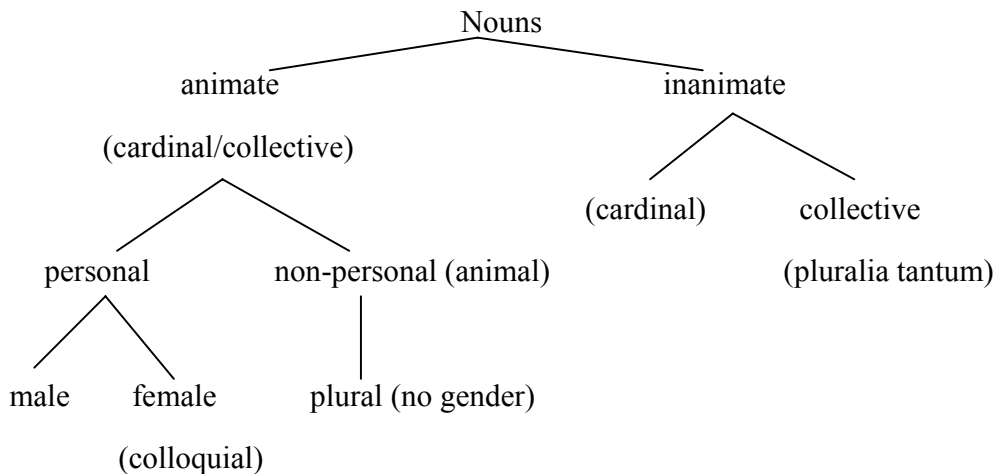
The Russian collective numerals cannot be used with all kinds of nouns. They are selectively chosen by the nouns. According to *Russkaja Grammatika* (RG-I 1982: 575-581), the usage of the Russian collective numerals can be summarized as follows:

- i. with masculine nouns or dual gender nouns indicating a male person
- ii. with substantivized adjectives, i.e. adjectival-nouns indicating a male person
- iii. with certain specific plural nouns denoting people  
         e.g., *дету* ‘children’, *ребята* ‘boys’, *ребятишки* (dim. of *ребята*),  
         *люди* ‘people’, *лицо* ‘person’ etc.
- iv. with inanimate pluralia tantum (PT) nouns
- v. with nouns indicating pairs of objects
- vi. with the plural forms of personal pronouns
- vii. with nouns indicating immature baby/young animals  
         e.g., *котята* ‘kittens’, *кенгурята* ‘young kangaroos’ etc.
- viii. with feminine nouns, especially suffixed ones (only in colloquial speech)



From the data above, nouns with collective numerals can semantically be classified into the following categories: i) animate vs. inanimate, ii) personal vs. non-personal, and iii) male vs. female. That is, three major criteria differentiate the use of the collective numerals on the basis of lexical meanings and features: 1) Animacy Criterion, 2) Personal Criterion, and 3) Male Criterion. The Animacy Criterion distinguishes animate beings from inanimate PT nouns and nouns denoting paired objects. Moreover, the Male Criterion serves as a criterion, which distinguishes the standard literary forms from the acceptable forms that can be tolerated as colloquial uses.

(12) The Classification of Nominal Features



Collective numerals quantify inanimate plural-only nouns, i.e., PT nouns or nouns naming a pair of objects, to mark the plurality of these nouns doubly: the number of the item and their inherent plural meanings at the same time. To analyze the semantics of nouns, the nominal features classified in (12) will be utilized in MLR, which demonstrates R- and F-features on the basis of the inherent lexical meanings of nouns. The MLR is a full set of semantic and grammatical features. The MLR in (13) illustrates a full-fledged collection of R- and F-features of a PT noun ‘a sledge, a sleigh’.

(13) MLR of Pluralia Tantum Noun {*san*’-i}

{ <i>san</i> ’-} ‘a sledge’	
Meaning	Noun
<b>R-features</b>	<b>F-features</b>
	[declension class: ]
[animal: – ]	[animacy: – ]
[sex: ]	[gender: ]
[personal: ]	([virile: ])
[cardinality: ]	[number: pl ]

As shown in (13), the PT noun {*san*’-} has the [number: pl.] feature as an F-feature. After receiving [case] feature, the lexical stem {*san*’-} must be spelled out in the plural, because the [number: pl.] feature is already valued. Although the correlation between [cardinality: ] and [number: ] is facultative, i.e., specified by speakers, PT nouns inherently mark the [number: pl.] feature. Therefore, subject-predicate agreement occurs always with plural forms of predicates. When they need to express their plurality, PT nouns must be quantified by collective numerals. For instance, *dvoe sanej* ‘two sledges’, *troje očkov* ‘3 pairs of glasses’, *čtyvero nožnic* ‘four pairs of scissors’, etc. As Stankiewicz (1986) mentioned, PT nouns already holding the feature [number: pl.] in MLR can mark their numerical quantification by utilizing collective numerals. This is so-called ‘double marking in number’.

Going back to the features in (12), the *Male Criterion* presupposes that a series of features, i.e., [sex:m] and [animal: +], are valued. This criterion distinguishes the literary use from the colloquial use: for example, *troje mal’čikov* ‘three boys’ vs. *troje ženščin* ‘(coll.) three women’. The *Personal Criterion* allows young animals to be used with collective numerals, since no gender distinction is emphasized and its meaning is collective as a group of young animals of a kind: for example, *troje kozljat* ‘three goat kids’, *čtyvero ščenjat* ‘four puppies’, *pjatero kotjat* ‘five kittens’, etc. The *Animate*

*Criterion* differentiates the collective meaning of animate nouns from that of inanimate nouns: for example, *dvoe studentov* ‘two students’ vs. *dvoe nožnic* ‘two pairs of scissors’, *troje znakov* ‘three acquaintances’ vs. *troje sutok* ‘three days’, etc.

## 2.1. Animate Nouns

### 2.1.1. Masculine nouns or dual gender nouns indicating a male person.

While the Russian cardinal numerals do not restrict their use to a certain group of nouns, the collective numerals do. Masculine nouns indicating a male person, e.g., *student* ‘a student’, *mal’čik* ‘a boy’, *otec* ‘father’, *učitel’* ‘a teacher’, etc., can be combined with collective numerals without any restrictions: *dvoe studentov* ‘two students’, *troje mal’čikov* ‘three boys’, *čtyvero vračej* ‘four doctors’, *pjatero učitelej* ‘five teachers’, etc. In this case there exists a semantic distinction between cardinal and collective numerals. The former expresses the individuated interpretation, while the latter marks collectivity (*sovokupnost’*), i.e., totality or the cohesiveness as a whole.

There is another group of nouns called ‘dual gender nouns’ (in Russian, *obščego roda* ‘common gender’): for example, *sluga* ‘servant’, *sirota* ‘an orphan’, *tězka* ‘namesake’, *nerjaza* ‘sloven’, *sonja* ‘sleepy-head’, and *zanuda* ‘bore’, etc. This noun group belongs to the declension class (henceforth, DC) II, to which most feminine nouns belong. The gender of dual gender nouns is not specified by lexical items, so that their [sex: ]/[gender: ] features are not predictable until real world referents are applied in utterances. That is, the [sex: ] feature of a real world referent determines the [gender: ] feature of the nouns.

Moreover, the use of collective numerals is avoided for homogeneous constituents of females, i.e., *dve<sub>CARD</sub> siroty* ‘two (female) orphans’ is preferred in the case of a

female-only group, while *dvoe<sub>COLL</sub> sirot* ‘two orphans’ is preferred for either a male group or mixed-gender group (Wade and Holman 2000). Some more examples are as follows:

- (14) Двое слуг следовали за ним с подобострастием.  
 two<sub>COLL</sub> servants<sub>GEN.PL</sub> followed him with servility  
 ‘(The) two servants followed him with servility.’

- (15) Остаются двое сирот: Мария и Дмитрий.  
 remain<sub>3.PL</sub> two<sub>COLL</sub> orphans<sub>GEN.PL</sub> Maria and Dmitrij  
 ‘Two orphans remain: Maria and Dmitrij.’

### 2.1.2. Substantivized adjectives, or adjectival nouns

Substantivized adjectives, so-called adjectival nouns, have adjective endings: *znakomyj/znakomaja* ‘male/female acquaintance’, *russskij/russkaja* ‘a male/female Russian’, *časovoj* ‘sentry, sentinel’, *proxožij* ‘a passer-by’, *bol’noj/bol’naja* ‘male/female patient’ and so on. Adjectival nouns are preferably quantified by collective numerals rather than by cardinal numerals unless the quantified phrase specifies a group of females only. Cardinal numerals are used with adjectival nouns to indicate a group of female gender only, e.g., *dve rabočix/rabočije* ‘two workers’, *tri znakomyx/znakomyje* ‘three acquaintances’, *četyre bol’nyx/bol’nyje* ‘four patients’, etc.

- (16) В дверях стояло двое штатских.  
 by door stand two<sub>COLL.NOM</sub> civilians<sub>GEN.PL</sub>  
 ‘Two civilians stood by the door.’

- (17) К регулировщику подъезжают трое верховых.

to traffic-controller drive up three<sub>COLL.NOM</sub> riders<sub>GEN.PL</sub>

‘Three riders are driving up to the traffic-controller.’

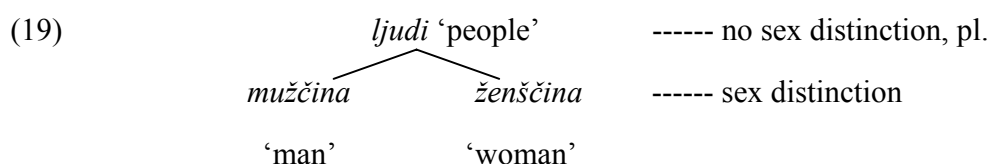
(18) Двое рабочих откидывали толстые стойки прицепа.

Two<sub>COLL.NOM</sub> worker<sub>GEN.PL</sub> threw away big stanchions (of) the trailer

‘Two workers threw away the big stanchions of the trailer.’

### 2.1.3. Nouns indicating persons: *дети, ребята(ребятишки), люди, лица*

Collective numerals can be integrated with nouns of generic meaning that distinguish no gender. For instance, a word *ljudi* ‘people’ presupposes three possible combinations of people: i) a group of males and females, ii) a group of males only, and iii) a group of females only. This can be formulated as a diagram below.



Therefore there is no gender distinction with the following nouns: *ljudi* ‘people’, *rebjata* ‘children or lads’, *deti* ‘children’, and *lica* ‘people’ etc. These nouns are usually used in plural forms, where no gender marking occurs. In this case, gender is not focused and what is more important is ‘a group of people’ that these nouns denote.

### 2.1.4. Personal pronouns

Collective numerals can combine with personal pronouns in the plural. Like nouns of generic meaning mentioned in 1.3 above, personal pronouns specify no gender composition of a group. The personal pronoun *nas* ‘we<sub>GEN</sub>’ in (20) can be interpreted into

three possibilities: i) a mixed group of males and females, ii) a male group, or iii) a female group.

(20) Нам было пятеро.

We<sub>GEN</sub> were five<sub>COLL.NOM</sub> (in number)

‘We were five in number.’

Personal pronouns quantified by collective numerals also express a combination of a person and any kind of object: a thing, or an animal.

(21) Нам было двое, не считая собаки. Я и август.<sup>16</sup>

we<sub>GEN</sub> were two<sub>COLL</sub>, not counting<sub>PART</sub> dogs. I and August.

‘We were two, without counting dogs. I and August.’

(22) Шли двое: студент и дождь<sup>17</sup>

went<sub>3.PL</sub> two<sub>COLL</sub>: student and rain

‘Two were going: a student and rain.’

#### **2.1.5. Feminine nouns (only in colloquial usage)**

In CSR, the use of collective numerals with nouns denoting female persons is still not fully regarded as a literary norm and is characteristic of colloquial or substandard Russian (Mel'čuk 1985; RG-I 1982; Ščerbakov 1969; Suprun 1959; Timberlake 2004; Zaliznjak 1977: 67). In his empirical research performed in Moscow, Nikunlassi (2000) confirms that ‘collective numerals are rarely used with nouns denoting females’.<sup>18</sup>

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<sup>16</sup> <<http://www.ruscorpora.ru>>

<sup>17</sup> <<http://www.ruscorpora.ru>>

<sup>18</sup> The data below were acquired by Nikunlassi's research done in Moscow in February 1998 with students of the School of Journalism at Moscow State University and school children of School No. 1273 in

In Russian a noun *studenty* ‘students’ can be interpreted into the following ways: a unity of males only or a mixed-gender unity of males and females. For a group of females only there is a female form *studentki* ‘(female) students’. Unlike male nouns with R-features of [personal: +] and [sex: m] in the MLR, it is not the norm for collective numerals to be used with nouns containing the [personal: +] and [sex: f] features. However, female nouns can also be utilized in colloquial (*ustnaja reč*’) and common parlance (*prostorečie*). Female nouns can be combined with collective numerals when they need to emphasize ‘the quantity’ or ‘the specificity of the quantity’. This phenomenon is caused by analogy with nouns possessing the same morphological endings like *rebjata* ‘lads’ (from *troje rebjat* ‘three lads’) or *muščina* ‘a man’ (*dvoje mužčin*) (Rozental' 1974: 156). The following examples (23)-(26) show that feminine nouns can be quantified by collective numerals.

- (23) девочек, хоть десятеро будь, их легче воспитывать.

girls<sub>GEN.PL</sub> although ten<sub>COLL.NOM</sub> are, them easier educate

‘It is easier to educate girls, although there are of them.’

- (24) Семья Зиненок состояла из отца, матери и пятерых дочерей.

Family Zinenok consist of father, mother, and five<sub>COLL.GEN</sub> daughters<sub>GEN.PL</sub>

‘Zinenok’s family consist of father, mother, and 5 daughters’

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Moscow. The table displays ‘Distribution of various complement types denoting human beings, with три<sub>CARD</sub> ‘three’, трое<sub>COLL</sub> ‘three’ and collective numerals from 2 to 7 standing in a direct case’. (Nikunlassi 2000: 213)

	Двое-Семеро (N=126)	Трое (N=36)	Три (N=49)
1 <sup>st</sup> declension masculines	66.7	77.8	71.4
2 <sup>nd</sup> declension masculines and common gender nouns	11.1	8.3	0.0
Adjectives	19.8	11.1	2.0
Nouns denoting females	2.4	2.8	26.5

- (25) В Одессе "Лексус" и "Митсубиши" сбили двоих девушек.<sup>19</sup>  
 In Odessa Lexus and Mitsubishi hit two<sub>COLL.NOM</sub> women<sub>GEN.PL</sub>  
 'Lexus and Mitsubishi hit two women in Odessa.'
- (26) У нас двое дочерей – 2,5 года и 3 месяца<sup>20</sup>.  
 With us two<sub>COLL.NOM</sub> daughters<sub>GEN.PL</sub> – two and half years and three months  
 'We have two daughters – two and half years and three months.'

#### 2.1.6. *Animals*

Collective numerals can be used with nouns denoting 'young animals' in CSR. Nouns ending in *-(j)ata* indicate 'young animal': for instance, *kotjata* 'kittens', *ščenjata* 'puppies', *volčata* 'wolf-cubs', *teljata* 'calves', *porosjata* 'piglets', etc. From the historical point of view, the suffix *-(j)ata* originated from the Proto-Slavic cognate *-\*ent*, which indicates the collectivity. This productive suffix is characteristic of 'young animals'.

- (27) Волчат казалось четверо.  
 Wolves<sub>GEN.PL</sub> seemed to be four<sub>COLL.NOM</sub>  
 'Wolves seemed to be four' (Mel'čuk 1985: 387)

Moreover, if higher numerals are used with nouns indicating 'young animals', especially in the accusative, the collective numerals are preferred as follows:

- (28) В тот день охотникам удалось поймать всех пять волчат/  
 On that day hunters succeeded to catch all<sub>ACC</sub> five<sub>CARD.ACC</sub> wolves<sub>GEN.PL</sub>/

<sup>19</sup> [Segodnja 01.20-2009](http://segodnja.01.20-2009)

<sup>20</sup> <http://fampsyholog.dtalk.ru/archive/view/790496>



всех пятерых волчат.

all<sub>ACC</sub> five<sub>COLL.ACC</sub> wolves<sub>ACC.PL</sub>

‘On that day the hunters succeeded in catching all the five wolves.’

(Nikunlassi 2000: 231)

Nikunlassi (2000: 231) states that the Animacy Rule (acc=gen) has an important role in selecting collective numerals. The need to emphasize animacy triggers the use of collective numerals, which replace cardinal numerals in the genitive-accusative context as in (28) above.

#### 2.1.7. Others

When a proper noun is used together with collective numerals, it denotes ‘members of a family’ as a whole, but not individuated members of the family.

(29) Мы, шестеро Джеретти, сидели, дождаясь своей очереди.

We, six<sub>COLL.NOM</sub> Geretti, sit<sub>PAST</sub> wait for their turn

‘We, the six Geretti, were sitting, waiting for our turn.’

In addition, the collective numeral has partitive meaning when used with the preposition *iz* (+genitive) ‘from’.

(30) Четверо из сидящих за столом вынули сигары и усмехнулись.

Four<sub>COLL.NOM</sub> from sitting<sub>PART</sub> in the table took out cigarettes and grinned.

‘Four of those who were sitting in the table took out cigarettes and grinned.’

Lastly, collective numerals can indicate a mixed group of a male and a female as in (31) and (32), and an animate being and an inanimate object as in (33).

(31) Двое сирот, брат и сестра, вышли к нему.<sup>21</sup>

Two<sub>COLL.NOM</sub> orphans<sub>GEN.PL</sub>, brother and sister, went out to him

‘Two orphans, brother and sister, went out to him.’

(32) У меня трое – дочь 15, сыновья 13, 5 и 8.<sup>22</sup>

To me three<sub>COLL.NOM</sub> – daughter 15, sons 13.5 and 8

‘I have three (children) – daughter 15 years old, and sons –13.5 and 8 years old.’

(33) Шли двое: студент и дождь.<sup>23</sup>

Going two<sub>COLL.NOM</sub>: student and rain

‘The two are going: the student and the rain.’

## 2.2. Inanimate nouns

The use of collective numerals with inanimate nouns is a typical example of ‘the double marking of plurality’ (Stankiewicz 1986). Nikunlassi (2000: 235; cf. Mel’čuk 1985: 385) mentioned that collective numerals are rarely used with PT nouns denoting an event or food dish, such as *poxorony* ‘funeral’ or *šči* ‘cabbage soup’, while they can be acceptable stylistically, i.e., *troje poxoron* ‘three funerals’, *dvoje ščeј* ‘two portions/kinds of cabbage soup’, *troje duxov* ‘three bottles of perfume’, and *dvoje slivok* ‘two portions of cream’ etc., and their uses are considered as colloquial and substandard of CSR (Lopatin, Miloslavskij and Šeljakin 1989: 71; Wade and Holman 2000)

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<sup>21</sup> <<http://www.ruscorpora.ru>>

<sup>22</sup> [Naši deti: Podrostki \(2004\)](#) <<http://www.ruscorpora.ru>>

<sup>23</sup> [M. V. Musijčuk. O sxodstve priemov ostroumija i mexanizmov postroenija paradoksal'nyx zadač// «Voprosy psixologiji», No.6, 2003](#) <<http://www.ruscorpora.ru>>

### 2.2.1. inanimate pluralia tantum nouns

Most inanimate nouns are not compatible with collective numerals except for PT nouns or nouns of paired objects. These inanimate nouns are quantified by collective numerals, because they do not have singular forms and cannot realize the genitive singular form of a noun that lower cardinal numerals *dva* ‘two’, *tri* ‘three’, *četyre* ‘four’ require. This use results from a substitution for cardinal numerals in that the use of collective numerals in this context can solve the morphological problems caused by the lack of singular properties of PT nouns. In other words, collective numerals used with PT nouns do not convey the meaning of ‘collectivity’, ‘totality’, or ‘the cohesiveness of things’. They are just a replacement for cardinal numerals. Moreover, in case of its use even with animate nouns, higher collective numerals are often replaced with cardinal numerals, especially in the oblique cases, because the collectivity is not so much focused in the oblique cases as in the direct cases.

Along with the collective-distributive numeral forms *dvoe* ‘two’, *troje* ‘three’, *četvero* ‘four’, the collective-adjective forms of the numerals *dvoji* ‘two’, *troji* ‘three’ etc. co-existed until the middle of the 19<sup>th</sup> century. These old forms, however, were gradually supplanted by the modern forms *dvoe* ‘two’, *troje* ‘three’, *četvero* ‘four’, especially in the literary standard language (Vinogradov 1947: 308-11). The collective-distributive forms *dvoe* ‘two’, *troje* ‘three’, *četvero* ‘four’ etc. are combined with PT nouns.

(34) Они уже трое суток голодают.

They already three<sub>COLL.NOM</sub> days and night<sub>GEN.PL</sub> starve

‘They are already starving three days and nights.’

In addition, the number value of numerals has an influence on the use of collective numerals. If number values of collective numerals are more than 4, then cardinal

numerals must be used instead of collective numerals, especially with inanimate nouns (Mel'čuk 1985; Nikunlassi 2000; RG-I 1982; Suprun 1959).

### 2.2.2. *Nouns indicating pairs of objects.*

Nouns defining 'paired objects', e.g., *sapogi* 'boots', *čulki* 'stockings', *noski* 'socks', *lyži* 'skis', *perčatki* 'gloves', etc., can be quantified by collective numerals. Most of the literature consider this use acceptable as a substandard or colloquial variation (Bulaxovskij 1958; Lopatin, Miloslavskij and Šeljakin 1989; RG-I 1982; Suprun 1959).

Collective numerals with nouns of paired objects are preferably replaced by the expression 'a pair of X' instead of a collective numeral plus noun phrase. For instance, *dvoe sapog* = *dve pary sapog* 'two pairs of boots', *troe noskov* = *tri pary noskov* 'three pairs of socks', *pjatero čulok* = *pjat' par čulok* 'five pairs of stockings' etc. (Mel'čuk 1985: 384-6; RG-I 1960: 378-381; Rozental' 1974: 156-7). Furthermore, example (35) shows a fixed expression, which uses collective numerals. For example:

- (35) У        меня не        двое        рук.  
 With   me   not   two<sub>COLL.NOM</sub>   hands<sub>GEN.PL</sub>  
 'I don't have two pairs of hands.'

### 2.2.3. *Others*

Some PT nouns, i.e., *slivki* 'cream', *šči* 'cabbage soup', and *duxu* 'perfume' etc., can be used with collective numerals. This is considered as the colloquial use of collective numerals (Wade and Holman 2000: 222).

- (36) Двое сливок   'Two types or portions of cream'

(37) Двое щей      ‘Two types or portions of cabbage soup’

(38) Трое духов    ‘Three types or bottles of perfume’

As mentioned before, the collective numerals help these plural-only nouns be marked ‘doubly’. Example (36) has the special meaning of ‘two portions of cream’ or ‘two packets of cream’, (37) – ‘two kinds of soup’ or ‘two portions of soup’, and (38) – ‘three types’ or ‘three bottles of perfume’ etc. (Wade and Holman 2000).

### 3. ANALYSIS OF COLLECTIVE NUMERALS

#### 3.1. Semantic Analysis

##### 3.1.1. *Individuated vs. Collective meanings*

As Timberlake (2004: 195-196) pointed out, “whether collectives are used rather than ordinary numerals depends primarily on the noun that is quantified and secondarily on the context”. The criterion *Animacy* enables collective numerals with animate nouns to have either a collective meaning or an individuated meaning of nouns. Especially for masculine nouns belonging to DC Ia, the choice of collective numerals is determined by semantic factors, i.e., individuated or collective meanings, which are related to contexts (RG-I 1982; Stankiewicz 1986; Timberlake 2004; Vinogradov 1947). For example:

(39) Теперь у него было пятеро детей, и эта должность его никак не устраивала.

‘By now he had five children, and so that occupation was no longer adequate.’

(Timberlake 2004: 196)

(40) Выдали пять карточек – на моих младших сестер Машу и Катю и на трех детей брата Владимира.

‘Five cards were issued – for my younger sisters Masha and Katia and for my brother Vladimir’s three children.’ (Timberlake 2004: 196)

According to Mel’čuk’s (1985: 394) explanation, example (41a) below is different from (41b) in their meanings. Example (41a) connotes that ‘the four students came to me’ all together for one purpose, while (41b) – that the action of ‘the students coming to me’ occurs at different moments and for different purposes.

- (41) a. Вчера ко мне приходили четверо незнакомых мне студентов.  
yesterday to me came four<sub>COLL.NOM</sub> unknown<sub>GEN.PL</sub> to me students<sub>GEN.PL</sub>  
‘Four unknown students came to me yesterday.’
- b. Вчера ко мне приходили четыре незнакомых мне студента.  
yesterday to me came four<sub>CARD.NOM</sub> unknown<sub>GEN.PL</sub> to me students<sub>GEN.PL</sub>  
‘Four unknown students came to me yesterday.’

### 3.1.2. *Animate vs. Inanimate*

Collective numerals can be combined with personal pronouns as a nominal complement of a copular-predicate. Pronoun *ix* ‘they<sub>GEN</sub>’ itself does not specify animacy. Whether they are animate or inanimate can be clarified by the combining numerals: animate beings are defined by collective numerals, whereas inanimate beings – by cardinal numerals.

- (42) a. Их было *пятеро*. (ix – ljudi ‘people’)  
‘They were five (people) in number.’
- b. Их было *пять*. (ix – predmety ‘objects’)

‘They were five (things) in number.’ (Mel’čuk 1985: 387)

The collective numeral *pjatero* ‘5’ in (42a) indicates ‘(a group of) five people’, whereas *pjat* ‘5’ – ‘five things’ in (42b). Moreover, animals with [animate: +]/[personal: –] features can also be quantified by collective numerals as follows:

- (43) Волчат            оказалось       четверо.  
Wolf<sub>GEN.PL</sub>    turn out to be    four<sub>COLL.NOM</sub>  
‘Wolves turned out to be four.’ (Mel’čuk 1985: 387)

### 3.1.3. Social ranks: high ranks vs. low ranks

A. Boguslavskij (1966: 205) pointed out that collective numerals are preferably used with nouns indicating ‘a group of people’. Collective numerals are more naturally combined with nouns denoting people of lower rank or social status.

#### (44) Nouns indicating low ranks or low social status

- Двое (трое, ....., пятеро) солдат;  
‘two (three, ....., five) soldiers’  
Двое студентов, трое лаборантов, четверо техников;  
‘two students, three lab assistants, four technicians’  
Двое мужиков, трое лакеев  
‘two men, three lackeys’ (Mel’čuk 1985: 392)

#### (45) Nouns indicating high ranks or high social status

- ?Двое генералов, ?трое адмиралов, ?четверо маршалов;  
‘?two generals, ?three admirals, ?four marshals’  
?Двое профессоров, ?трое ректоров;

‘?two professors, ?three rectors’

?Двое министров, ?трое президентов

‘?two ministers, ?three presidents’

(Mel’čuk 1985: 396)

In the same contexts as mentioned above, titles for high ranks, high social status, or high dignitaries of state or church, such as *sijatel’stvo* ‘(Your, His) Excellency’, *vysočestvo* ‘Highness’, *veličestvo* ‘Majesty’, *svjatejšestvo* ‘Holiness’, etc., are not utilized with collective numerals (Mel’čuk 1985: 383).

(46) a. Все три Их Высочества

‘All three their Highnesses’

b. ?Все трое Их Высочеств

‘?All three their Highnesses’

(Mel’čuk 1985: 383)

### 3.2. Morphological Analysis

Morphological desinences, i.e., inflectional endings, are one of the factors that trigger the use of collective numerals. For example, the second declension masculine nouns and substantivized adjectives denoting males or a mixed gender group are preferably used with collective numerals over cardinal numerals (Nikunlassi 2000: 215; Suprun 1959).

#### 3.2.1. Substantivised Adjectives

Substantivized adjectives favor collective numerals over cardinal numerals if they denote a non-feminine group. Cardinal numerals cannot be ruled out for this case, but when cardinal numerals accompany nouns indicating females, cardinal numerals, then,



are preferred (Wade and Holman 2000). Collective numerals specify the combination of groups: a homogeneous unit of male persons or a heterogeneous unit of mixed genders, while cardinal numerals do not have this gender specification. However, the feminine form *dve* ‘two’ can specify the gender of a group as in (49).

- (47) Двое<sub>COLL</sub> знакомых ‘two acquaintances (mixed gender/males)’  
 (48) Два<sub>CARD.M/N</sub>знакомых/??знакомые ‘two acquaintances (no gender specification)’  
 (49) Две<sub>CARD.F</sub>знакомые/знакомых ‘two acquaintances (females only)’

Both (47) and (48) can denote a group of male acquaintances or a group of mixed gender, while example (49) indicates a female group, since the cardinal numeral *dve* ‘two (f.)’ is marked as a feminine form by itself. In general, other cardinal numerals with no gender distinction in their forms, e.g., *tri* ‘three’, *četyre* ‘four’, *pjat* ‘five’, etc., imply either a homogeneous group, whether a male or female group, or a heterogeneous group.

### 3.2.2. Dual Gender Nouns or Masculine Nouns in *–a* indicating a male person (2<sup>nd</sup> declension nouns)

The following dual gender nouns belong to DC II: e.g., *starosta* ‘monitor’, *sud’ja* ‘judge’, *mužčina* ‘a man’, *sirota* ‘an orphan’, *tězka* ‘a namesake’ and so forth., as do certain masculine nouns, e.g., *muščina* ‘a man’, have the [sex: m]/[gender: m] and [declension class: II] valued by its morphological ending *–a*. This kind of masculine nouns has feature values as the following chart of MLR.

(50) MLR of Masculine Nouns in *-a*

{ <i>mužčin-a</i> } ‘a man’	
Meaning	Noun
<b>R-features</b>	<b>F-features</b>
	[declension class: II ]
[animal: + ]	[animacy: + ]
[sex: m ]	[gender: m ]
[personal: +]	([virile: ])
[cardinality: + ]	[number: sg ]

Dual gender nouns ending in *-a* differ from masculine nouns ending in *-a* in that the former do not specify the [sex: ]/[gender: ] values by the inherent lexical meaning of the nouns. In other words, a real world referent designated by speakers determines the [sex: ]/[gender: ] values of dual gender nouns. Dual gender nouns can be represented as follows:

(51) MLR of Dual gender Nouns in *-a*

{ <i>sirot-a</i> } ‘an orphan’	
Meaning	Noun
<b>R-features</b>	<b>F-features</b>
	[declension class: II ]
[animal: + ]	[animacy: + ]
[sex: ]	[gender: ]
[personal: +]	([virile: ])
[cardinality: + ]	[number: sg ]

As shown in (50) and (51), masculine nouns and dual gender nouns ending in *-a* are used with collective numerals, especially when the nouns refer to male referents. The use of collective numerals can avoid the use of overt feminine grammatical marking, which is used for masculine nouns. For instance, \**dve mužčiny* ‘two men’, or (?)*dva mužčiny* ‘two men’. These nouns prefer utilizing collective numerals because of the mismatch between DC and natural sex of the referent.

#### 4. SYNTACTIC PROPERTIES OF RUSSIAN COLLECTIVE NUMERALS

As discussed in Chapter One, the concept of ‘head’ is of great importance for the analysis of morphosyntactic idiosyncrasies of Russian numeral phrases: homogeneous and heterogeneous case marking, concord, and subject-predicate agreement, etc. Collective numerals in CSR behave differently from those in Old Russian. In Old Russian collective numerals are purely modifiers that agree in gender, number, and case with nouns they modify. In contrast, the Russian collective numerals in CSR govern the nouns they are combined with (Ivanov 1990; RG-I 1982; Suprun 1959; Vinogradov 1947; Xaburgaev 1974). That is, in Old Russian the homogeneous pattern of the collective numeral phrase, in which a noun is the head as the locus of case and determinant of concord, syntactically changed into the heterogeneous pattern. This historical linguistic development triggered the current complexity of headedness of the Russian collective numeral phrases. This tendency also had an influence on the development of cardinal numerals (Ivanov 1990: 311).

##### 4.1. Theoretical Background: Agree, Feature-Sharing, Spell-Out

As introduced in Chapter One, the operation *Agree* is an important mechanism to explicate the issues of headedness and morphosyntax of Russian numeral phrases. To explain the syntactic properties of subject-predicate agreement, concord, and case assignment, one should re-consider how the syntactic operation *Agree* works in the Minimalist Program (Chomsky 1995). The operation *Agree* applies between a head and a category it c-commands, i.e., a probe and a goal in the (a)symmetrical relationship. Under the operation *Agree*, many formal features interact in pairs: valued and unvalued. Over the course of the syntactic derivation, *Agree* plays two significant roles: i) feature-sharing as a process of *value*, and ii) structural case assignment. In the process of *Agree*, the

valued features in either a probe or a goal are copied onto a matching unvalued feature in the other so that they both have the same values, i.e., feature-sharing occurs between the probe and the goal in a sequence of syntactic operations. After the process of feature-sharing, valued features must be deleted (Adger 2003).

Representations with valued features are fed to the *Phonological Form* (PF) component, which then ‘spells out’ these features. That is, it provides the morpho-phonological and prosodic rules necessary to realize an abstract form {*work-*} plus the featural specifications of [person: 3] and [number: sg] as [works].

#### **4.2. Headedness of the Russian Collective Numerals**

Zwicky (1985) proposed eight criteria to determine the headedness of noun phrases.<sup>24</sup> Among his head-determining criteria, the morphosyntactic locus is considered as the most reliable criterion. Comparing the analysis of Zwicky (1985) with that of Hudson (1987), Corbett (1993) examined the headedness issue of the Russian numeral phrase *dva žurnala* ‘two journals’. He analyzed that the Russian lower numeral *dva* ‘two’ syntactically behaves as the head of the phrase. Zwicky (1985) and Hudson (1987) share the idea that the numeral *dva* ‘2’ is the subcategorizand, governor, and morphosyntactic locus, where morphological and syntactic marking occurs. According to Hudson (1987), the Russian lower numeral *dva* ‘2’ behaves as the head of the phrase.

Yet, Corbett (1993: 20) highlighted the diversity of Russian numerals in their syntax and the syntactic properties that the “numerals show ever ‘more’ government and ‘less’ agreement”. Neidle (1988: 90-4) also pointed out that the heads of Russian numeral

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<sup>24</sup> Zwicky(1985)’s eight Criteria to determine headedness: 1) semantic argument, 2) subcategorizand, 3) morphosyntactic locus, 4) governor, 5) determinant of concord, 6) distributional equivalent, 7) obligatory constituent, and 8) ruler in dependency grammar.

phrases changed in different contexts, i.e., the numeral is the head in direct cases, whereas it is not in oblique cases. Most of all, QP-hypothesis that numerals are the heads of numeral phrases does not explain the homogeneous morphosyntax of numeral phrases in oblique cases. Furthermore, it is not convincing to argue that the numeral *dva* ‘2’ is the head of the numeral phrase *dva žurnala* ‘two journals’, because it case-assigns the genitive case to the noun *žurnal*. This judgement ignores the fact that the masculine numeral form *dva* is selected by the masculine noun form *žurnal*.

Like Russian cardinal numerals, Russian collective numerals reveal that numerals are just modifiers and nouns are the genuine heads in various syntactic contexts. Russian collective numeral phrases have almost the same syntactic construction as cardinal numerals. Russian is a language that has strong inflections of modifiers, numbers, and nouns, etc. The governing relationship which is ubiquitous in English syntax cannot solve the peculiarities of Slavic syntax where the agreeing relationship is predominant.

These conflicts between the syntactic factors determining the headedness of Russian numeral phrases are solved by adopting the concept of “abstract quantitative case” proposed by Rappaport (2002; 2003b). His approach is based on the operation Agree, which is the fundamental mechanism for feature-sharing, concord, and case assignment.

#### ***4.2.1. Abstract Quantitative Case and its Spell-Out Rules***

Rappaport (2002; 2003b) proposes the idea that the syntactic difference between homogeneous morphosyntax and heterogeneous morphosyntax depends on whether pre-valued abstract quantitative case of numerals is present. This abstract quantitative case of numerals is copied onto the nouns which the numerals modify. As a sequence, a head

noun and its modifiers of a numeral phrase have the abstract quantitative case by the operation *Agree*. As the final Phonological Forms (PF), the spell-out forms of abstract quantitative case of numerals and nouns are all case-assigned to be visible in syntactic derivations. Agree is the major mechanism for all these syntactic operations. Agree is responsible for feature-sharing, agreement, and case assignment. Rappaport (2003b: 157) presented the simplified definition of Agree as follows:


- (52) a. Two categories Agree iff all of the following conditions are satisfied:
- one of the categories c-commands the other;
  - each of the categories is ACTIVE (i.e., contains some unvalued feature);
  - there is at least one matching feature shared by the two categories; and
  - for each pair of matching features, at least one must be unvalued.
- b. When two categories Agree:
- the value of any valued matching feature is copied onto unvalued counterpart; and
  - semantically uninterpretable features in the Agreeing categories are deleted from the Syntactic/Semantic derivation and passed on to Morphological Form.

(Rappaport 2003b: 157)

To illustrate the operation Agree with numeral phrases, the numeral phrase *pjat' mal'čikov* 'five boys' can be analyzed as the following: The cardinal numeral *pjat'* 'five' has pre-valued abstract quantitative case as an inherent lexical property. The abstract quantitative case of the numeral is copied onto the noun by Agree, i.e., [case: quantitative] of {*pjat'*-} is copied onto {*mal'čik*-} so that unvalued [case: ] becomes [case: quantitative]. The quantitative case of the numeral and the noun is spelled out by syncretism with another case. That is, the [case: quantitative] of the numeral {*pjat'*-} is spelled out as [*pjat'*] in direct cases, while the [case: quantitative] of the noun {*mal'čik*-} – as [*mal'čikov*], which is in the genitive plural form. This abstract quantitative case is

“never associated with a distinctive morpheme, but rather is only expressed in the form of a syncretism.” (Rappaport 2003b: 158). The phonological forms [pjat’] and [mal’čikov] are the results of spell-out rules, which reflect case assignment as well as agreement. The presence of abstract quantitative case causes heterogeneous case marking, while the lack of it – homogeneous case marking. Syncretism rules for Russian cardinal numerals are represented as follows:

(53) Spell-Out Rules for Russian Cardinal Numerals

Abstract Case	Spell-Out Forms	
	<u>Adjectivals</u>	<u>Nouns</u>
a. lower numerals: [case: paucal] → [case: gen; num: sg.] [case: gen.; num: sg.]		
		
	([case: nom: num:pl.]/__[gender: feminine])	
b. higher numerals: [case: quant.] → [case: gen; num: pl.] [case: gen.; num: pl.]		

According to (53), pre-valued abstract quantitative case shared by numerals and nouns via Agree is spelled out as paucal case for lower numerals and nouns, while it is spelled out as quantitative case for higher numerals and genitive case for the nouns which the numerals modify. The lack of abstract quantitative case renders lexically assigned case to percolate down onto nouns that other modifiers agree in person, number, gender and case. The spell-out forms shown in (53) are for direct case contexts. *The Animacy Rule* applies to lower numerals, while it does not apply to higher numerals. Under the condition of the Animacy Rule, the abstract [case: quant.] is spelled out as the genitive case: {dv-} and {student-} are spelled out as [dvux] and [studentov], which are in the genitive case. As for higher cardinal numerals, regardless of the Animacy Rule, the spell-out forms occur as in (53b): [case: quant.] for numerals and [case: gen.] for nouns. However, spell-out

forms of modifiers depend on [animacy] feature of the nouns which the numerals modify. That is, abstract [case: quant.] is spelled out as [case: acc.]/\_\_[animacy: -], while the abstract [case: quant.] is spelled out as [case: gen.]/\_\_[animacy: +]. This explains that the Russian numeral phrase *ètix pjat' professorov* 'these five professors' is grammatical, while the phrase *\*ètix pjati professorov*, whose numeral is syncretic with the genitive, is ungrammatical in direct case positions.

Now let us turn to Russian collective numerals. Spell-out rules of collective numerals are similar to that of higher cardinal numerals. The nouns which numerals modify are spelled out as the genitive case unconditionally. However, spell-out rules differ between higher cardinal numerals and collective numerals in that collective numerals are spelled out as the accusative case, which is syncretic with either the nominative case or genitive case depending on the [animacy] feature of nouns. For example:

- (54) И внезапно я видел *этих* *пять* ангелов...  
 and suddenly I saw these<sub>GEN.PL</sub> five<sub>CARD.QUANT</sub> angels<sub>GEN.PL</sub>...  
 'and suddenly I saw these five angels.'

- (55) Соединенные Штаты освободили *этих* *пятерых*  
 United States freed these<sub>GEN.PL</sub> five<sub>COLL.QUANT</sub>  
 мужчин из тюрьмы...  
 men<sub>GEN.PL</sub> from jails...  
 'The United States freed these five men from jails...'

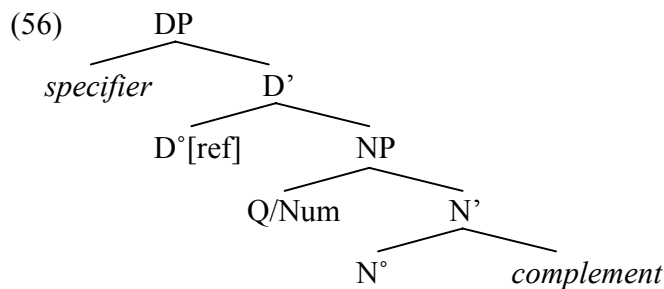
As shown in (54) and (55), the cardinal numeral *pjat'* 'five' is the form, which is syncretic with the accusative case, even though the noun *angely* 'angels' have the



[animacy: +] feature, while the collective numeral *pjatero* ‘five’ is spelled out as the genitive case with the [animacy: +] feature. Collective numerals undergo the Animacy Rule, so that they are spelled out as the genitive case in direct object positions when the [animacy: +] is present. Collective numerals differ from cardinal numerals in that the former have an animacy feature, while the latter do not.

#### 4.2.2. Syntactic Structure of collective numeral phrases

Like cardinal numerals, collective numerals have the following syntactic structure, where NPs embracing QP (*Quantifier Phrase*) on their specifier positions are embedded into DP projection with referential features, as shown in the tree diagram below:



D° is the locus of the ‘referential feature’, which is a necessary element for NPs. This projection is extended over the NP projection, where N° is a head and the Q°/QP including numerals merges onto the specifier-of-N. As shown in (56) above, N° and D° are both syntactic heads of the phrase, while Q/Num is not in a head position.

Under X-bar Theory, complements and specifiers are both selected by the head as arguments, while adjuncts are not. The only difference between complements and specifiers is that ‘complement’ is the first merge of the arguments of head N°, while

‘specifier’ is the second merge. Adjuncts can be added in a recursive way, but specifiers cannot (Rappaport 2000).

#### ***4.2.3. Syntactic consequences of Ns as heads***

To support the claim that collective numerals are modifiers, while nouns are syntactic heads in collective numeral phrases, the following factors must be investigated: i) genitive-accusative, ii) participles, iii) attributive modifiers, and iv) autonomous use of collective numerals. Collective numerals behave differently from cardinal numerals. The use of collective numerals presupposes that collective numerals are, in most cases, selected by nouns containing [masculine] and [animacy] features and, in turn, the nouns are not spelled out, because they are predictable. In contrast to collective numerals, cardinal numerals do not have any limitation to their use, so that they are not predictable.

##### **4.2.3.1. Genitive-Accusative**

In CSR animate nouns belonging to DC Ia, i.e., masculine nouns ending in a consonant indicating an animal, take the accusative form, which is identical to the genitive form in the singular paradigm of the declension, while the Animacy Rule (acc.=gen.) applies to all animate nouns in the plural paradigm, regardless of their declension class.

Compared with cardinal numerals, collective numerals behave in a different way: the Animacy Rule applies to collective numerals, since they can be used mostly with animate nouns denoting a male person. For example:

(57) Например, в прошлой Думе мы исключили из партии

for example, in last Duma we expelled from party

пять депутатов за нарушение дисциплины.<sup>25</sup>

five<sub>CARD</sub> deputies for violation (of) principle

‘For example, in the last Duma we expelled five deputies from the party for violation of disciplines.’

(58) Вешали пятерых декабристов.<sup>26</sup>

Hanged five<sub>COLL.ACC</sub> Decembrists<sub>GEN.ACC</sub>

‘(They) hanged five Decembrists.’

In (57) the Animacy Rule does not apply to the higher cardinal numeral phrase, while in (58) it is observed that the Animacy Rule applies to the collective numerals due to the semantics of the noun. On the grounds of Zwicky’s (1985: 6) criteria, “the morphosyntactic locus” is the noun in this case. The collective numeral *pjateryx* ‘5 (collective, acc.)’ in (59) is the agreeing form with its head noun in  $\phi$ -features: [number: pl], [gender: m.], and [case: acc].

With regard to the application of genitive-accusative, collective numerals are preferred to cardinal numerals, when higher numerals (5 and above) are used with nouns denoting animate beings. This tendency prevails more, especially when a pre-modifier is utilized within the numeral phrase (Mel’čuk 1985; Nikunlassi 2000; Ščerbakov 1969).

(59) Он пригласил всех шестерых – (? шесть) мальчиков к себе в кабинет.

he invited all<sub>ACC</sub> six<sub>COLL</sub> – six<sub>CARD</sub> boys to himself into office.

‘He invited all six to his office.’ (Mel’čuk 1985: 393)

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<sup>25</sup> [Nakazy rabočix Urala \(2003\) // «Sovetskaja Rossija», 2003.06.15](http://ruscorpora.ru) <<http://ruscorpora.ru>>

<sup>26</sup> [Jurij Davydov. Sinie Tjul’pany \(1988-1989\)](http://ruscorpora.ru) <<http://ruscorpora.ru>>

Nikunlassi (2000: 229-33) claims that the use of collective numerals is preferred even when a pre-modifier *vsex* ‘all’ is absent before the combination of numerals and nouns.<sup>27</sup> This Animacy Rule applies even to non-personal animate nouns like (60) below.

- (60) ...ребенок выкинул в окно одного за другим пятерых котят,  
 ...the child threw out the window one after another five<sub>COLL.ACC</sub> kittens<sub>ANIM.ACC.PL</sub>,  
 будучи уверенным, что они появятся снова, как в компьютерной игре.<sup>28</sup>  
 being confident that they will show up again, as in a computer game.  
 ‘The child threw five kittens out of the window one after another, being  
 confident that they will show up again as in a computer game.’

#### 4.2.3.2. Participles

Participles are closely related to the headedness of an antecedent numeral phrase, since they have to agree in  $\phi$ -features, i.e., [person: ], [number: ], [gender: ], and [case: ] with the preceding nouns they refer to. They may agree either with the head noun of the antecedent numeral phrase (61) or with the whole phrase semantically (62). Examples are as follows:

- (61) двое людей, выросших как из-под земли.<sup>29</sup>  
 two<sub>COLL.NOM</sub> people<sub>GEN.PL</sub>, appeared<sub>GEN.PL</sub> as if from under ground  
 “Two people, who appeared as if from under the ground”
- (62) двое людей, выросшие как из-под земли.

<sup>27</sup> Cf. Nikunlassi (2000: 231-232)

<sup>28</sup> [Sergej Šerstennikov. Duševnyj čelovek \(2002\) // «Avtopilot», 2002.12.15](http://www.ruscorpora.ru) <<http://www.ruscorpora.ru>>

<sup>29</sup> [Arkadij Xajt. Iz zbornikov prošlyx let \(1960-1990\)](http://www.ruscorpora.ru) <<http://www.ruscorpora.ru>>

two<sub>COLL.NOM</sub> people<sub>GEN.PL</sub>, appeared<sub>NOM.PL</sub> as if from under ground

“Two people, who appeared as if from under the ground”

In the case of the use of the genitive form, it is construed that the participle modifies the head noun of the numeral phrase (Babby 1985b: 13; Crockett 1976: 345; Suprun 1964: 83). There is a semantic difference between (61) and (62) in that the nominative case of (62) implies definiteness and the genitive case of (61) – indefiniteness (Iomdin 1979: 37; Mel'čuk 1985: 448-9).

(63) Na stole stajala ogromnaja vaza s fruktami,.

on table stood huge bowl with fruits,

i Senja vzjal dve spelye/spelyx gruši

and Senja took two ripe<sub>ACC</sub>/ripe<sub>GEN</sub> pears.

‘There was a huge bowl of fruits on the table, and Senja took two ripe pears.’

(Iomdin 1990: 100)

As shown in (63), the accusative case of the numeral phrase *dve spelye<sub>ACC</sub> gruši* ‘two ripe pears’ indicates that there were only two ripe pears, which were taken by Senja, while the genitive case implies that there were more than two ripe pears, from which Senja took two ripe pears. Peškovskij (2001: 440) asserts that the genitive form of the adjective *spelyx* ‘ripe’ emphasizes quantity, while the nominative form *spelye* ‘ripe’ – the quality of the numeral phrase.

#### 4.2.3.3. Attributive Modifier

Attributive modifiers, i.e., demonstratives, possessives, or numerals etc., illustrate that NPs are heads of Russian numeral phrases. Especially higher cardinal numerals have

the same accusative form of the numerals, that is, there is no special form for the animate accusative form, which is syncretic to the genitive form for other lower numerals or nominal phrases. However, when an attributive modifier is added to a cardinal numeral phrase, the modifier has to be under the control of the Animacy Rule (acc=gen) as in (64a) below. For this reason, the modifier *ètix* ‘these’ modifies the head noun *dedušek* ‘grandfathers’, which is the locus of animacy marking. In other words, in this case the noun is the morphosyntactic locus, so that it is the head of the phrase.

- (64) a. Этих / \*эти пять дедушек [ACC]  
 these<sub>ACC.ANIM</sub>/these<sub>ACC.INANIM</sub> five<sub>ACC</sub> grandfathers<sub>ACC.ANIM</sub>  
 ‘These five grandfathers’
- b. Этих пяти дедушек [GEN]  
 These<sub>GEN</sub> five<sub>GEN</sub> grandfathers<sub>GEN.PL</sub>  
 ‘These five grandfathers’

In (64b) one can observe that the Animacy Rule (acc=gen) cannot apply to the Russian higher cardinal numeral. The genitive form *ètix pjati dedušek* ‘these five grandfathers’ in (64b) cannot be used as the accusative case. The Animacy Rule can, however, apply to Russian collective numerals. The application of the Animacy Rule to collective numerals can be observed in (65) below.

- (65) Этих пятерых дедушек (acc=gen)  
 these<sub>ACC.ANIM</sub> five<sub>COLL.ACC</sub> grandfather<sub>ACC.ANIM</sub>  
 ‘These five grandfathers’

#### 4.2.3.4. Autonomous use of the collective numeral

(66) a. (сдал на) *круглое*                      пять                      ‘(passed with) A+  
    round<sub>ACC.NEUT.SG</sub>   five<sub>ACC</sub>  
      b. (написал) *большое*                      десять                      ‘(wrote) a big ten’  
    big<sub>ACC.NEUT.SG</sub>   ten<sub>ACC</sub>                      (Suprun 1959: 80)

b. \*У самой воды лежали/лежало пять  
by (the) edge (of) water lay<sub>PL</sub> five<sub>COLL</sub>  
'Five (people) lay by the very water.' (Mel'čuk 1985: 380)

- (68) a. Ко мне пришли/пришло двое.  
           to me           came           two<sub>COLL</sub>  
           ‘Two (people) came to me.’
- b. \*Ко мне пришли/пришло два  
           to me           came           two<sub>CARD</sub>  
           ‘Two (people) came to me.’

As mentioned in the section on the headedness of cardinal numeral phrases, the heads of collective numeral phrases are also nouns, which license the choice of collective numerals. Example (68a) shows that the collective numeral *dvoe* ‘two’ appears to be the head of the phrase. However, it implies that the noun which the collective numeral *dvoe* ‘two (people)’ modifies need not be spelled out, because collective numerals are selected by the properties of nouns and, in turn, their meanings and features can be easily predictable.

### 4.3. Subject-Predicate Agreement

Subject-Predicate Agreement (SPA) is closely related to the issue of headedness. Like cardinal numerals, collective numerals as an agreement controller vary in their effect on subject-predicate agreement: either singular or plural, namely ‘default’ or semantic agreement. Default presupposes that there is no nominative case which licenses subject-predicate agreement. The absence of the nominative case triggers the crash of syntactic derivations, and finally the neuter singular form of the predicate is employed as a default form.



From the traditional point of view, agreement occurs under the condition that an agreement controller seeks an agreement target to make both the controller and the target agree syntactically in  $\phi$ -features and case. For example, in *odna krasivaja devuška* ‘a/one beautiful lady’, the head noun *devuška* possesses the nominal  $\phi$ -features of [number: sg.], [gender: f.], [case: nom.] as an agreement controller that searches for a target, which is two modifiers *odna* ‘one’ and *krasivaja* ‘beautiful’. These modifiers completely agree with those  $\phi$ -features that the noun holds, that is, the agreement target acquires the very nominal features that the agreement controller has. In (69) below, the cardinal numeral *odna* (f.) ‘one’ and the adjective *krasivaja* (f.) ‘beautiful’ are both modifiers, while the noun *devuška* (f.) ‘lady’ is the head.

- (69) Одна                      красивая                      девушка  
       one<sub>F.SG.NOM</sub> beautiful-<sub>F.SG.NOM</sub> lady-<sub>F.SG.NOM</sub>  
       ‘A beautiful lady/woman’

Unlike *odna* (f.) ‘one’, however, paucal numerals (2, 3, and 4) and higher numerals (5 and above) reveal a different pattern. The internal structure of these numerals is the same in that the numerals, as modifiers, agree with head nouns in  $\phi$ -features.

- (70) a. два студента/ две студентки                      ‘two students(m.) / (f.)  
       b. пять студентов/ пять студенток                      ‘five students(m.) / (f.)

Assuming that (70a) and (70b) are both in the nominative case, the paucal numerals in (70a) take a genitive singular form of the noun, while higher numerals take a genitive plural form of the noun in (70b). Furthermore, these numerals exhibit dichotomous case marking instances depending on whether used with the direct or oblique case:

homogeneous case assignment occurs in the oblique cases, whereas heterogeneous case assignment – in the direct cases.

With the syntactic properties of cardinal numerals in mind, let us return to collective numerals. They are similar to paucal and higher cardinal numerals in that the numerals value abstract quantitative case feature onto nouns except for *odin* ‘1’ and, in turn, the quantitative case is spelled out by syncretism: the quantitative case valued by paucal cardinal numerals is spelled out as the genitive singular, while the quantitative case valued by higher cardinal numerals is spelled out as the genitive plural. The collective numerals combine with nouns in the genitive plural from *dvoe* ‘2’ to *desjatero* ‘10’.

These idiosyncratic properties of the numerals can be solved by accepting the concept of abstract quantitative case suggested by Rappaport (2002). This abstract quantitative case of numerals spread onto nouns or modifiers is spelled out by syncretism with other cases. Spell-out forms are the results of syncretism, which is rendered by morphological rules as the last step of PF (Phonological Form). That is, within the Minimalist Program, subject-predicate agreement occurs between  $T^\circ$  and  $N^\circ$ .  $T^\circ$  with [nom] case must value its case feature to a highest projection of  $N^\circ$  in order to delete its [nom] case feature. As a visibility requirement,  $N^\circ$  has to value uninterpretable (unvalued) case feature [case: ] by acquiring [nom] case from  $T^\circ$ . As soon as the NP receives [nom] case, the NP can finally be visible and can be spelled out at PF.

#### (71) The Spell-Out Rule of Numeral Phrases

Numeral *dvoe* ‘2’ plus noun {STUDENT-} ‘students’<sup>30</sup>

→ a. nominative :  $NOM$  [*dvoe*<sub>NOM</sub> *studentov*<sub>GEN.PL</sub>]

<sup>30</sup> Capitalized letters in the brackets are represented as a form of a noun with no case, or before Spell-out. According to Case Theory or Visibility Condition, nouns cannot spell out without acquiring case feature.

→ b. accusative : ACC [*dvoix*<sub>ACC</sub> *studentov*<sub>ACC.PL</sub>]

As shown in (71) above, [nom] case feature is the necessary condition to trigger subject-predicate agreement between T° and its argument NP. The absence of [nom] case in a sentence engenders an agreement-less form, i.e., the neuter singular form ‘default’, which is well-known as default. The default form occurs when an NP cannot be valued [nom] case feature, that is, [nom] case must be valued for a subject in a finite sentence.

Keeping in mind the interrelationship of [nom] case with the occurrence of agreement, one clearly understands that [nom] case is the most crucial factor in deciding whether agreement occurs or crashes.

#### (72) The Occurrence of Agreement

The presence of [nom] → Agreement: grammatical agreement

The absence of [nom] → Non-Agreement: default (neuter singular form)

With regards to agreement, one can re-evaluate conditions under which grammatical agreement occurs when [nom] case is present. In (73) below semantic agreement and grammatical agreement are both possible, but default cannot occur, since the NP *moj brat* ‘my brother’ exists in the nominative case and has a full set of  $\phi$ -features necessary for subject-predicate agreement. In (73) semantic agreement can occur in the plural form, but grammatical agreement cannot occur because the numeral *dvoe* ‘2’ represents *quantitative case*, which is syncretic with [nom] case and [acc] form for inanimate nouns. As a result, it causes a default form in (74). The default form is preferred in (74), especially when the predicate *prišlo* ‘came’ precedes the subject *dvoe detej* ‘two children’. In the example of the animate accusative *ètix pjat’ studentov* ‘these five students’, it is observed that the Animacy Rule (acc=gen) does not apply to higher

cardinal numerals. This can be a piece of evidence that the cardinal numeral *pjat* ‘five’ is valued quantitative case (QC), which can stand in the direct case context.

- (73) Мой брат с мамой пошли/пошёл/\*пошло в магазин.  
 my brother<sub>NOM</sub> with mom went<sub>PL/M.SG/NEUT.SG</sub> to store  
 ‘My brother went to the store with mom.’

- (74) Ко мне пришли/пришло двое детей.  
 to me came<sub>PL/NEUT.SG</sub> two<sub>COLL.QUANT</sub> children<sub>GEN.PL</sub>  
 ‘Two children came to me.’

With regard to subject-predicate agreement, there are many factors which determine agreement patterns. In the event that a subject with numerals, either cardinals or collectives, denotes a quantity and is marked as indefinite or non-specific, it is preferred that the predicate stands in the neuter singular, i.e., default.

- (75) Состоялось девять встреч.  
 Took place<sub>NEUT.SG</sub> nine<sub>COLL.QUANT</sub> meeting<sub>GEN.PL</sub>  
 ‘Nine meetings took place.’ (RG-II 1982: 242)

When the expiration of a time period is of interest, the singular form is preferred and the last verb among enumerated verbs must always be singular.

- (76) a. Пройдет два года. ‘Two years will pass.’  
 b. Сорок минут истекло. ‘Forty minutes went by.’  
 c. Ему стукнуло тридцать лет. ‘He is past 30.’ (RG-II 1982: 243)

#### 4.3.1. Verbal predicates: features, word order, definiteness

In CSR subject-predicate agreement occurs by means of various combinations of features: subject-predicate agreement in the present tense requires [person: ] and [number: ] features to be explicitly marked, whereas in the past tense [number: ] and [gender: ] must be marked. For example, the sentence *Vesna* (f.sg.nom.) *nastupaet* ‘Spring is coming/comes’ shows that the formal grammatical features, i.e., [person: 3] and [number: sg], are marked in the present tense, while the sentence *Vesna nastupila* ‘Spring came’ marks the features of [number: sg.] and [gender: f.]. As mentioned before, in the case of the presence of [nom] as a subject, either grammatical agreement or semantic agreement can occur. The default form, however, occurs due to the lack of [nom] case for the subject.

##### 4.3.1.1. Predicate + Subject

RG (1982) states that a verbal predicate can be either a singular or a plural form when a collective numeral phrase functions as the subject of a sentence. The default form is triggered by the absence of the nominative case. The third person singular form is the default.

(77) Двое не явились/явилось.

two<sub>COLL.NOM</sub> not appeared<sub>PL/NEUT.SG</sub>

‘(The) two (people) didn’t show up.’

(78) Приезжают/приезжает семеро.

(are) coming (by vehicle) seven<sub>COLL.NOM</sub>

‘Seven (people) are coming.’

According to RG (vol.II 1982: 242), the singular agreement is preferred, when a predicate stands by itself (*nerasprostranennoe*) and precedes its subject. In (78) the singular form is preferred to the plural form.

#### 4.3.1.2. Subject + Predicate

As opposed to the sentential sequence ‘*predicate–subject*’ above, ‘*subject–predicate*’ word order has some distinctive characteristics. As the traditional examples are shown below, there is no doubt that word order changes the meanings of sentences.

- (79) На столе книга.  
on table book<sub>F.SG.NOM</sub>  
‘There is a book on the table.’

- (80) Книга на столе.  
book<sub>F.SG.NOM</sub> on table  
‘The book is on the table.’

In the existential construction (79) the noun *kniga* ‘(a/the) book’ is *Rheme*, which is ‘new information’ in opposition to *Theme*, which is ‘old information’. In (80), however, the noun *kniga* ‘(a/the) book’ functions as *Theme*. From this point of view, it is natural for the subjects of transitive verbs or verbs denoting dynamic actions to precede their predicates and to serve as agent roles. In case of a numeral subject being followed by a verbal predicate, its predicate prefers a plural form as in (81) below.

- (81) Трое детей играли в прятки.

three<sub>COLL.NOM</sub> children<sub>GEN.PL</sub> played<sub>PL</sub> hide-and-seek

‘Three children played hide-and-seek.’

(82) В прятки            играло            шестеро            детей.

Hide-and-seek   played<sub>NEUT.SG</sub> six<sub>COLL.NOM</sub> children<sub>GEN.PL</sub>

‘Six children played hide-and-seek.’

As mentioned before, (82) is different from (81) in ‘THEME-RHEME’ structure, that is, the subject of (81) is well-known, specific, or definite, while that of (82) is indefinite or unspecific. *Troe detej* ‘three children’ of (81) can be either DP or NP, which is at least specific, even though it is not definite. *Šestero detej* ‘six children’ of (82) cannot be DP, since it is new information and it is neither definite nor specific. Most of all, the predicate *igralo*<sub>NEUT.SG</sub> ‘played’ does not have an agentive meaning, i.e., little *v*, which is responsible for the thematic role of ‘agent’, is missing above VP in the structure. In other words, the predicate *igralo*<sub>NEUT.SG</sub> ‘played’ in (82) indicates the state of the action taking place, but not the action itself.

#### 4.3.2. *Definiteness/Specificity of the agreement controller*

Aside from the word order factor, definiteness or specificity of a subject can, indeed, be another factor to determine either the singular or the plural form of a predicate. When a subject is already well-known, definite, or specific (*konkretno-predmetnoe*), the predicate must be plural. In the case of the presence of overt agreeing modifiers (e.g. *eti* ‘these’, *ostal’nye* ‘the rest (of)’, *vse* ‘all’ etc.) or concretely defining modifiers, the plural form must be used (RG-II 1982: 242). Although she adheres to the QP-hypothesis that numerals are the heads of Slavic numeral phrases, Pereltsvaig (2006) shows that there is

the difference between QPs and DPs; DPs take the plural form of predicates, while QPs without DP projections mostly take the singular form of predicates, because definiteness is marked on D°.

(83) Ожидали троих, а явилось/явились двое.

Expected three<sub>ACC</sub>, but appeared<sub>NEUT.SG/PL</sub> two<sub>NOM</sub>

Эти двое явились с опозданием.

these<sub>NOM.PL</sub> two<sub>NOM</sub> appeared<sub>PL</sub> late

‘...expected three, but two appeared. These two showed up late.’

(RG-II 1982: 242)

(84) Те двое из управления приехали как ревизоры.

Those<sub>NOM.PL</sub> two<sub>NOM</sub> from government came<sub>PL</sub> as inspectors

‘Those two came from the government as inspectors.’ (RG-II 1982: 242)

(85) К нам в класс пришли новички: Андрей, Борис, и Ваня. Начиная с первого дня, трое мальчиков (?три мальчика) всегда держались вместе. [можно было бы сказать... эти три мальчика]

To us into class came new students: Andrej, Boris, and Vanja. (Starting) from the first day, the three<sub>COLL.NOM</sub> boys<sub>GEN.PL</sub> always stuck together.

‘New students came in our class: Andrej, Boris, and Vanja. The three boys always stick together from the first day.’ (Mel’čuk 1985: 394)

Mel’čuk (1985) claims that the collective numerals themselves have a special function to mark definiteness, which cannot be expressed by the cardinal numerals as exemplified in (85) above. The collective numeral phrase *troje mal’čikov* ‘the three boys’ cannot be substituted for the cardinal numeral phrase *tri mal’čika* ‘three boys’, but if the



demonstrative pronoun *èti* ‘these’ is added to the cardinal numeral phrase, then the cardinal numeral phrase *èti tri mal’čika* ‘these three boys’ can be equivalent to *troje mal’čikov* ‘the three boys’ in marking definiteness. When the approximate quantity is expressed, the singular verb must be used.

- (86) Квартиры получает около трехсот семей.  
 Apartments receive<sub>NEUT.SG</sub> about<sub>PREP</sub> 300<sub>GEN</sub> families<sub>GEN.PL</sub>  
 ‘About 300 families are receiving apartments.’ (RG-II 1982: 243)

- (87) Откроется более сорока школ.  
 Open<sub>NEUT.SG</sub> more forty<sub>GEN</sub> school<sub>GEN.PL</sub>  
 ‘More than forty schools will open.’ (RG-II 1982: 243)

In (86) and (87) the approximate quantificational phrases lack [nom] case for the occurrence of agreement between T° and NP. There is no doubt that the default form is utilized for these uses. In the case that a collective numeral construct indicates ‘a group of people’ and it is separated from its predicate by other words, the predicate must be in the plural.

- (88) Двое бойцов, посланных в разведку, не вернулись.  
 Two<sub>COLL.NOM</sub> warriors<sub>GEN.PL</sub>, sent<sub>PART.GEN.PL</sub> on reconnaissance, not returned<sub>PL</sub>  
 ‘Two warriors, sent on reconnaissance, didn’t return.’ (RG-II 1982: 243)

#### 4.3.3. Co-occurrence with Pronouns

Collective numerals used with plural pronouns, i.e., *nas* ‘we’, *vas* ‘you’, *ix* ‘they’ trigger the singular agreement. This use of collective numerals with plural forms of

pronouns commonly occurs in existential constructions and collective numerals quantify pronouns which do not specify gender.

(89) Нас (вас, их) двое было.

$we_{GEN}$  (you<sub>GEN</sub>, they<sub>GEN</sub>) two<sub>COLL.NOM</sub> were<sub>NEUT.SG</sub> (in number)

‘We (you, they) were two in number.’

(90) Нас (вас, их) было двое.

‘We (you, they) were two in number.’

As for subject-predicate agreement, the default form occurs, because the collective numeral *dvoe* ‘two’ does not have any  $\phi$ -features except for case feature. Therefore, the neuter singular form as a default is used. Singular forms of predicates are preferred when the components of collective numeral phrases, i.e., a collective numeral, is separated from a noun by an intervening intransitive verb as in (91) and (92) below.

(91) Учеников пришло двое.

pupils<sub>GEN.PL</sub> came<sub>NEUT.SG</sub> two<sub>COLL.NOM</sub>

‘Two pupils came.’

(RG-II 1982: 243)

(92) Трое родилось сыновей.

three<sub>COLL.NOM</sub> (were) born<sub>NEUT.SG</sub> sons<sub>GEN</sub>

‘Three sons were born.’

(RG-II 1982: 243)

#### 4.4. Case Assignment

Case marking universally occurs either structurally or inherently. For NPs to be visible, case must be assigned to the NPs as a necessary condition. Structural case

assignment occurs by means of the operation *Agree* between a probe and a matching goal (Butt 2006; Chomsky 1995; Radford 2004). In Slavic morphosyntax, structural case assignment is associated with heterogeneous morphosyntax, while inherent case assignment is associated with homogeneous morphosyntax. In other words, the former pattern is observed in direct case contexts, while the latter pattern is observed in oblique case contexts.

#### 4.4.1. Structural Case Assignment

Structural case assignment for collective numeral phrases occurs in the same manners as that of cardinal numerals: [nom] case on T° is valued onto quantified NPs and, in turn, [person: ], [number: ], [gender: ] features are valued onto T° by the operation *Agree*. This general analysis cannot solve the Slavic puzzles of numeral phrases. The adoption of abstract quantitative case proposed by Rappaport (2002, 2003) can consistently analyze two different morphosyntactic patterns of case assignment with the idea of the NP-hypothesis.

Collective numerals differ from cardinal higher numerals in that they are susceptible to the influence of the Animacy Rule. Collective numerals combined with animate nouns are spelled out as the accusative case, which is syncretic with the genitive case.

- (93) Мой сосед          купил    этих          пять          кошек.  
       my   neighbor   bought   these<sub>QUANT</sub>   five<sub>CARD.QUANT</sub>   cats<sub>GEN.PL</sub>  
       ‘My neighbor bought these five cats.’

- (94) Папа канонизировал пятерых          новых    святых          Римской церкви.<sup>31</sup>

<sup>31</sup> <http://www.newsru.com/religy/27apr2009/kanonisation.html> <<http://newsru.com>>

Pope canonized            five<sub>COLL,QUANT</sub> new<sub>GEN</sub> saints<sub>GEN</sub> of Roman Catholic Church  
‘Pope canonized five new saints of Roman Catholic Church.’

As shown in (93) and (94), the Animacy Rule applies to these sentences, because animate nouns are used within the domain of VP. However, as in (93), the cardinal higher numeral *pjat* ‘five’ is not genitive-accusative form. The use of the numeral phrase [*ètix pjati košek*]<sub>GEN</sub> ‘these five cats’ engenders an ungrammatical sentence. As mentioned before, this problem can be solved by the adoption of quantitative case. This abstract quantitative case of numerals is copied onto nouns and modifiers by the operation Agree. The valued quantitative case of numerals, nouns and modifiers is spelled out by syncretism or direct suffixation of zero-ending. In (93), abstract quantitative case is spelled out by the direct spell-out of the suffixation of zero-desinence {-ø}. As for the collective numeral *pjatero* ‘five’ in (94), abstract quantitative case of the collective numeral is spread onto the noun and the adjective via Agree. The quantitative case is spelled out as the genitive case for the noun and the adjective, while it is spelled out for the noun as the accusative case, which is syncretic with the genitive case.

#### **4.4.2. Inherent Case Assignment**

Inherent case assignment differs from structural case assignment in that the case which is lexically assigned by inherent case assigner is valued onto a head noun. In Slavic morphosyntax, inherent case assignment results in homogeneous morphosyntactic pattern. This difference between heterogeneous and homogeneous case assignment can be analyzed by whether abstract quantitative case of numerals is present. Pre-valued abstract quantitative case feature, i.e., [case: quant.], triggers heterogeneous morphosyntax, while unvalued quantitative case, i.e., [case: ], enables inherently assigned

case to percolate from the head noun to the numeral and any other modifiers (Rappaport 2002, 2003b).

## Chapter Three: Bosnian/Croatian/Serbian Collective Numerals

### 1. INTRODUCTION

#### 1. 1. BCS numerals

Bosnian/Croatian/Serbian (henceforth, BCS) belongs to the group of South Slavic languages, along with Slovene, Macedonian, and Bulgarian. Like other Slavic languages, BCS inherited some morphosyntactically idiosyncratic properties of the numeral system from Common Slavic, Proto-Slavic, and even Proto-Indo-European. BCS numeral phrases can be divided into several types: i) cardinal numerals, ii) ordinal numerals, iii) collective numerals, iv) fractions, and v) approximate quantificational expressions (Alexander 2006: 197; Jahić, Halilović and Palić 2000; Maretić 1963; Stevanović 1970). This chapter will investigate BCS collective numbers<sup>32</sup> in order to account for their morphosyntax within the framework of the Minimalist Program (Chomsky 1995).

Unlike Russian numerals, BCS numerals do not decline (Belić 1962; Magner 1991; Maretić 1963; Mrazović and Vukadinović 1990; Stevanović 1970). Cardinal numerals 5 and above have only one form (*pet* ‘5’, *šest* ‘6’, *sedam* ‘7’, *deset* ‘10’ etc.). While lower numerals (2, 3, 4) have case forms, they are usually not used (Jahić, Halilović and Palić 2000; Mrazović and Vukadinović 1990). The oblique cases of lower numerals can be occasionally observed in literary texts or more formal contexts

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<sup>32</sup> ‘*Collective numbers*’ will be utilized as a term that generalizes three types of collectives: i) collective numeral substantives, ii) collective numerals, and iii) collective numeral adjectives. For example:

e.g.,	Dvojica dečaka	‘two boys’
	Dvoje učesnika	‘two participants (mixed gender)’
	Dvoja vrata	‘two doors’

(Alexander 2006; Maretić 1963; Raguž 1997; Šipka 2007). Another characteristic of BCS numerals is that lower numerals distinguish primary gender in all forms.<sup>33</sup>

The indeclinability of BCS cardinal numerals is extended to collective numerals (e.g., *dvoje* ‘2’, *troje* ‘3’, *četvoro/četvero* ‘4’, *petoro/petero* ‘5’, etc.), collective numeral substantives (e.g., *dvojica* ‘2’, *trojica* ‘3’, *četvorica* ‘4’, *petorica* ‘5’ etc.), and even collective numeral adjectives (e.g., *dvoji/dvoje/dvoja* ‘two’, *troji/troje/ troja* ‘three,’ *petori/petore/petora* ‘5’ etc.).

### ***1.1.1. Cardinal Numerals (osnovni brojevi)***

Cardinal numerals (*jedan* ‘1’, *dva/dve* ‘2’, *tri* ‘3’, *četiri* ‘4’, *pet* ‘5’, *šest* ‘6’, *sedam* ‘7’, *osam* ‘8’, *devet* ‘9’, *deset* ‘10’, etc.) are used for counting quantity or specifying amount. Compared with collective numbers, cardinal numerals are more likely to be used for individuated meaning rather than collective meaning. With regard to gender specification, cardinal numerals used with masculine nouns do not express gender specification of a group, while they specify a group of females only, when used with feminine nouns. For example, the cardinal numeral phrases *moja dva prijatelja* ‘my two friends’ and *pet dobrih studenata* ‘five good students’ do not specify the gender of the groups. However, the cardinal numeral phrases *moje dve prijateljice* ‘my two female friends’ and *pet dobrih studentkinja* ‘five good female students’ specify the homogeneity of female members of the group. Collective numerals are utilized to specify gender of a group consisting of collective numerals plus masculine nouns.

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<sup>33</sup> In Modern Slavic there is a subcategory of gender, so-called ‘secondary gender’, which contains  $\phi$ -features such as [animate]/[personal] referring to human-beings, and [masculine]/[personal]. ‘The secondary genders affect only the nominative plural and the accusative (and marginally the genitive singular), and then not in all the numbers and not in all the languages.’ In the plural, primary gender is observed in the direct cases of agreeing modifiers in BCS, Slovenian, and partly in Czech, while secondary gender occurs in the plural in East and West Slavic. (Sussex and Cubberly 2006: 238-239)

### 1.1.2. Collective numbers (*zbirni brojevi*)

#### 1.1.2.1. Agreeing<sup>34</sup> vs. non-agreeing<sup>35</sup> collective numbers

In BCS there are two different types of collective numbers: one type agrees with nouns they modify, and the other does not.<sup>36</sup> The former is used in plural for all genders, whereas the latter is used only in neuter singular (Maretić 1963; Šipka 2007).

##### (1) *The BCS Collective Numerals*

	Agreeing Coll. Num.			Non-Agreeing Coll. Num.
	Plural			Singular
Gender	<i>Masculine</i>	<i>Feminine</i>	<i>Neuter</i>	<i>Neuter</i>
2	dvoji	dvoje	dvoja	dvoje
3	troji	troje	troja	troje
4	četvori	četvore	četvora	četvoro
5	petori	petore	petora	petoro
6	šestori	šestore	šestora	šestoro
7	sedmori	sedmore	sedmora	sedmoro
8	osmori	osmore	osmora	osmoro
9	devetori	devetore	devetora	devetoro
10	desetori	desetore	desetora	desetoro

The plural agreeing collective numerals, so-called *collective numeral adjectives*, are used with inanimate *Pluralia Tantum* (henceforth, PT) nouns (e.g., *vrata* ‘door’, *makaze* ‘scissors’, *novine* ‘newspaper’, *pantalone* ‘trousers’, *mašice* ‘tongs’, *saonice* ‘sledge’ *naočari* ‘spectacles’, *terazije* ‘weighing-scales’ etc.) or nouns denoting paired objects (e.g. *čarape* ‘stockings’, *opanci* ‘peasant shoes’, *rukavice* ‘gloves’, etc.).

<sup>34</sup> Agreeing collective numerals are correspondent to ‘*brojni pridevi*’, whose meaning is ‘numeral adjectives’.

<sup>35</sup> Non-agreeing collective numerals are called ‘*zbirni brojevi*’.

<sup>36</sup> For this reason, agreeing collective numerals are called ‘numeral adjectives’ (Daničić 1863; Stevanović 1970; Mrazović and Vukadinović 1990; Raguž 1997; Jahić 2000)



The non-agreeing collective numerals are used with nouns indicating living things of mixed gender (Magner 1991; Mrazović and Vukadinović 1990). When the non-agreeing collective numerals are used autonomously without nouns, they designate the mixed-gender specification of human beings.

(2) - Jeste li bili jedina Romkinja tamo?  
 AUX<sub>2.PL/polite</sub> PARTICLE were<sub>PL</sub> one (female) gypsi there  
 ‘Were you the only gypsi there?’

- Ne, bilo nas je dvoje ili troje.<sup>37</sup>  
 No, were<sub>NEUT.SG</sub> we<sub>GEN</sub> AUX<sub>3.SG</sub> two<sub>COLL.NEUT.SG</sub> or three<sub>COLL.NEUT.SG</sub>.  
 ‘There were two or three of us (men and women).’

#### 1.1.2.2. Declension Paradigm of Collective Numerals

*Collective numeral adjectives* decline like the plural forms of the possessive pronoun *moj* ‘my’ (Magner 1991; Maretić 1963; Stevanović 1970).

#### (3) Declension Paradigm of Collective Numeral Adjective

		<i>Masculine</i>	<i>Feminine</i>	<i>Neuter</i>
Pl.	Nom.	dvoj-i	dvoj-e	dvoj-a
	Gen.	dvoj-ih		
	Acc.	dvoj-e		
	Dat.	dvoj-ima		
	Instr.			
	Prep.			

Unlike the collective numeral adjectives above, non-agreeing collective numerals decline as follows (Belić 1962: 186-188):

<sup>37</sup> <http://www.vreme.com/cms/view.php?id=432425>

#### (4) Declension Paradigm of Collective Numerals

	2	3	4	5	6	10
Nom/Acc	dvoje	troje	četvoro	petoro	šestoro	Desetoro
Gen.	dvoga	troga	četvorga	petorga	šestorga	desetorga
Dat/Instr/Prep	dvoma	troma	četvorma	petorma	šestorma	desetorma

Belić (1962: 187) states that non-agreeing collective numerals are observed in the oblique cases. There are some possible variations of non-agreeing collective numerals in the oblique cases as in (5) and (6), or in the genitive and in the dative or prepositional case, respectively.

(5) Genitive: dvojega > dvojga > dvoga

(6) Dat/Prep: dvojemu > dvojem > dvom > dvoma > dvome

Despite the instances showing their declinable forms in oblique cases, especially in literary works, the use of indeclinable forms of collective numerals is prevailing in contemporary BCS.

#### **1.1.3. Collective numeral substantives (*kvantifikativne imenice*): dvojica, trojica, četvorica**

In addition to collective numerals, nouns in *-ica*, which I will call ‘*collective numeral substantives*,’ also have numerical value and collective meaning. They express ‘totality’ or ‘the cohesiveness of members’ and are formed from the stems of collective numerals by adding the nominal suffix *-ica*. Collective numeral substantives indicate ‘a group of males only.’ These collective numeral substantives can be formed from 2 to 99 (Maretić 1963; Mrazović and Vukadinović 1990), but cannot be derived from 100 and 1000. Furthermore, these collective numeral substantives in *-ica* cannot express numbers

ending in ‘1’, for example, 1, 21, 31, and 41 etc. (Maretić 1963: 229). As a result, they have to signify those numerals with cardinal number ‘1’ as in (8)

(7) Dvadeset i *petorica* vojnika ‘25 soldiers’

(8) dvadeset i *jedan* vojnik ‘21 soldiers’

Examples of these forms are as follows: *dvojica*, ‘2’, *trojica* ‘3’, *četvorica* ‘4’, *petorica* ‘5’, *šestorica* ‘6’..... *desetorica* ‘10’, *jedanaestorica* ‘11’ (Mrazović and Vukadinović 1990: 239-241).

Sometimes the phoneme /o/ before /r/ can be replaced with /e/, for example, *sedmorica* > *sedmerica* ‘7’ etc. (Daničić 1863: 52). This can be regarded as a dialectal variant, but in modern BCS both forms *sedmorica/sedmerica* ‘7’ are considered literary forms (Maretić 1963: 231). Alexander (2006) mentioned that the /-ero/ forms are preferred in Croatian and the /-oro/ forms – in Bosnian and Serbian.

When combined with collective numeral substantives, the complement nouns should be in genitive plural. Most of all, collective numeral substantives have case and  $\phi$ -features, i.e., [person: 3], [number: sg.], and [gender: f.], because they are nouns that have numerical value. Collective numeral substantives have the following declension paradigm. They decline in the oblique cases like *žena* (f.sg.) ‘a woman, wife’

(9) Collective Numeral Substantive Declension Paradigm

	Collective nouns	Quantified nouns
Nom/Voc	<i>petorica</i>	<i>studenata</i>
Gen	<i>petorice</i>	<i>studenata</i>
Dat/Loc	<i>petorici</i>	<i>studenata</i>
Acc	<i>petoricu</i>	<i>studenata</i>
Instr	<i>petoricom</i>	<i>studenata</i>

## 1.2. The Definition of BCS Collective Numbers

As Stankiewicz (1986) points out, BCS plurals fit his four-fold scheme of plurals as in other Slavic languages: i) simple plural, ii) counted plural, iii) collective plural, and iv) counted collective plural. It is of great significance that collective plurals must be quantified by collective numbers, i.e., by collective numeral substantives, collective numerals, and collective numeral adjectives.

### (10) The Four-Fold Scheme of BCS Plurals

BCS	Simple Plural		Counted Plural	
	sinovi	‘sons’	(dva) sina	‘two sons’
	polja	‘fields’	(dva) polja	‘two fields’
	jaganjci	‘lambs’	(dva) jaganjca/jagnjeta	‘two lambs’
	pilići	‘chickens’	(dva) pilića/pileta	‘two chickens’
	pilad	‘chickens’	dvoje jagnjadi	‘two lambs’
	jagnjad	‘lambs’	dvoje piladi	‘two chickens’
	Collective Plural		Counted Collective Plural	
			dvojica studenata	‘two students (male)’

(BCS forms excerpted from Stankiewicz 1986:155)

Feminine collective nouns in *-ad* e.g., *pilad* < *pile* ‘a chicken’, *prasad* < *prase* ‘a pig’, *momčad* < *momče* ‘a boy’ etc., have special morphosyntactic properties: for instance, the noun e.g., *pile*, *pileta* (gen.) ‘a chicken’ is a neuter singular form, but it has two plural forms: one is *pilad* ‘chickens’, which is a feminine collective plural form, whereas the other is *pilići* ‘chickens,’ which is a non-collective plural form specifying the individuated meaning. The form *pilad* ‘chickens’ is quantified by collective numbers as in (10) above. In contrast to the form *pilad*, the non-collective plural form *pilići* ‘chickens’ is quantified by cardinal numerals. The following nouns belong to this group:

*pile* ‘a chicken’ > *pilići* > *pilad*, *prase* ‘a pig’ > *prasići* > *prasad*, and *tele* ‘a calf’ > *telići* > *telad*, etc.

### 1.3. The Formation and Diachronic Development of BCS Collective Numbers

Like Russian, BCS collective numbers are formed from the cardinal stems, or rarely, the ordinal stem, e.g., *četr-* for ‘4’, by adding the suffixes *-oje/-oro/-ero*. For instance, *dv-oje* < *dv-a* ‘2’, *tr-oje* < *tr-i* ‘3’, *četvororo/četvero* < *četr(r)ti* ‘4’, *pet-oro/pet-ero* < *pet* ‘5’, and *desetoro/desetero* < *deset* ‘10’, etc. Unlike collective numerals, collective numeral substantives are derived from the collective numeral stems such as *dvoj-* ‘2’, *troj-* ‘3’, *četvor-* ‘4’, *petor-* ‘5’, *devetor-* ‘9’, and *desetor-* ‘10’, etc., by adding the collective nominal suffix *-ica*. For example, *dvojica* ‘2’, *trojica* ‘3’, *četvorica* ‘4’, *petorica* ‘5’, *šestorica* ‘6’, *sedmorica* ‘7’, *desetorica* ‘10’, *dvadesetorica* ‘20’, and so forth.

Contrary to Russian where the old agreeing collective numerals (e.g., *dvoi* ‘2’, *troi* ‘3’, *četvery* ‘4’ etc.) died out and the non-agreeing forms now supersede the old forms, BCS still utilize both agreeing (*dvoji* (m.pl)/*dvoje*(f.pl)/*dvoja*(n.pl) ‘2’) and non-agreeing forms, i.e., collective numeral adjectives (*brojini pridevi*) and collective numerals (*zbirni brojevi*), respectively.

- (11) a. *dvoji*            *ljudi*  
           two<sub>NOM.PL</sub> people<sub>NOM.PL</sub>    ‘two persons/people’  
       b. *troje*            *makaze*  
           three<sub>NOM.PL</sub> scissors<sub>NOM.PL</sub>    ‘3 pairs of scissors’  
       c. *desetora*    *kola*

ten<sub>NOM.PL</sub> carriages<sub>NOM.PL</sub> ‘10 carriages’ (Belić 1962: 187)

(12) Za brak je dovoljno dvoje, za porodicu troje...<sup>38</sup>

for marriage enough<sub>NEUT.SG</sub> two<sub>COLL</sub>, for family three<sub>COLL</sub>...

‘For marriage two is enough, for family – three...’

## 2. THE GENERAL USE OF THE BCS COLLECTIVE NUMBERS

### 2.1. Animate Nouns

#### 2.1.1. Masculine Nouns and Dual Gender Nouns in *–a*

As in Contemporary Standard Russian (henceforth, CSR), there is a group of nouns ending in *–a*, which I call ‘dual gender’ nouns in BCS: *sudija* ‘judge’, *mušterija* ‘customer’, *pijanica* ‘drunkard,’ etc. This group of nouns belongs to Declension Class (henceforth, DC) II, but their gender is determined by a referent in the real world.<sup>39</sup> This difference between DC and gender triggers the use of the collective numbers.

(13) Sjede *dvojica* *pijanica* u kafani.

Sit<sub>3.PL</sub> two<sub>COLL.F.SG</sub> drunkard<sub>GEN.PL</sub> in café.

‘There are two drunkards sitting in the café.’

Similar to dual gender nouns, whose gender is facultatively determined by a referent, some male nouns belong to DC II due to their morphological forms ending in *–a*: *komšija* (m.)

<sup>38</sup> [http://www.yu4you.com/items/en/knjiga/item\\_10085.html](http://www.yu4you.com/items/en/knjiga/item_10085.html)

<sup>39</sup> Wechsler and Zlatić (2003: 44) claims that dual gender nouns like *mušterija* ‘a customer’ and *pijanica* ‘a drunkard’ etc., are semantically unmarked for sex when they are used with feminine forms.

e.g.> Ta mušterija je došla.  
That.F customer AUX.SG came.F

‘That (male or female) customer came.’ (Wechsler and Zlatić 2003: 44)

‘a (male) neighbor’. The noun *komšija* ‘a (male) neighbor’ even has its corresponding female form *komšinica* ‘a female neighbor’.

- (14) Dvojica          komšija          (su) umrla    od    infarkta          u istom dvorištu.<sup>40</sup>  
 two<sub>COLL.F.SG</sub>    neighbor<sub>GEN.PL</sub>          died    from    heart attack    in same backyard  
 ‘Two (male) neighbors died from a heart attack in the same backyard.’

Collective numeral substantives agree with plural predicates, i.e., *su*<sub>AUX</sub> and can alternatively have semantic agreement, i.e., masculine plural *umrli*<sub>M.PL</sub> for *l*-participles instead of grammatical agreement, i.e., feminine singular *umrla* like (14) above.

### 2.1.2. Substantivized Adjectives (Adjectival Nouns)

Substantivized adjectives, so-called *adjectival nouns*, are characterized by the mixed morphosyntactic properties from their adjectival forms and function as nouns. These adjectival nouns behave like simple nouns in all syntactic respects.

- (15) Dvoje                  mrtvih                  u Kolima Hitne<sup>41</sup>.  
 Two<sub>COLL.NEUT.SG</sub>    dead (people)<sub>GEN.PL</sub>    in ambulance  
 ‘Two dead people (a man and a woman) in the ambulance’

In BCS adjectival nouns are not used as commonly as in Russian. The properties of adjectival nouns, however, are related to the use of collective numbers. Especially when they are numerically quantified, adjectival nouns encourage the use of collective numbers, since once the adjectival nouns are quantified, there is no other way to express the genders of the group members, i.e., if the group members are all male, collective

<sup>40</sup> <http://www.vesti.rs/Hronika/Dvojica-komsija-umrla-od-infarkta-u-istom-dvoristu.html>

<sup>41</sup> <http://www.aktuelnosti.com/sr/dvoje-mrtvih-u-kolima-hitne-itm65226.html>

numeral substantives (e.g., *dvojica* ‘2’, *trojica* ‘3’, *čtvorica* ‘4’, *petorica* ‘5’...etc.) are used, while if the members are in a mixed group of males and females, then collective numerals (e.g., *dvoje* ‘2’, *troje* ‘3’, *četvoro* ‘4’, *petoro* ‘5’...etc.) are utilized instead of collective numeral substantives.

### 2.1.3. Collective Nouns indicating ‘persons, people’: *deca* ‘children’ vs. *braća* ‘brothers’

As mentioned by Stankiewicz (1986), collective nouns, e.g., *deca* ‘children’, *braća* ‘brothers’, *gospoda* ‘gentlemen’, etc., can be quantified by collective numbers, since they have inherent collective meanings, which do not match their forms. In the case of *deca* ‘children’, the collective noun *deca* ‘children’ does not specify one gender, because the noun *deca* ‘children’ embraces both male and female children, regardless of the potential combinations of a group: males only, females only, and mixed gender. In this respect, the collective noun *deca* ‘children’ must be quantified by a collective numeral, but not by collective numeral substantives, since the noun *deca* ‘children’ lacks the gender distinction of boys from girls by the word itself.

- (16) Majka    iz    plamena    spasla    dvoje/\*dvojica    dece<sup>42</sup>.  
 Mother   from   fire           saved   two<sub>COLL.NEUT.SG</sub>   children<sub>GEN.PL</sub>  
 ‘Mother saved two children from the fire.’

Since *deca* ‘children’ covers the meanings of both *momak*, *mladić* ‘a boy’ and *devojka*, *devojčica* ‘a girl’, the collective noun *deca* ‘children’ cannot be used with collective numeral substantive *dvojica* ‘2’ that specifies only ‘a male group’ as in (16). In addition,

<sup>42</sup> <http://www.totalportal.net/vojvodina/majka-iz-plamena-spasla-dvoje-dece>



it is significant that *deca* has the plural meaning, but has a singular declension paradigm like *žena* ‘a woman’.

As opposed to *deca* ‘children,’ collective noun *braća* ‘brothers’ has the corresponding countable forms of the noun for lower numbers (2, 3, 4), e.g., *dva brata* ‘two brothers’, *tri brata* ‘three brothers’ etc. More than four of the noun cannot be quantified by cardinal numerals: \**pet bratova* ‘5 brothers’, \**šest bratova* ‘6 brothers’, and \**deset bratova* ‘10 brothers’, etc. Instead, collective numerals are used with the collective form of the noun *braća* ‘brothers’ to express higher numerals: *petorica braće* ‘5 brothers’, *šestorica braće* ‘6 brothers’, *desetorica braće* ‘10 brothers’, etc.

#### 2.1.4. Personal Pronoun

When used with collective numbers, personal pronouns should be in the genitive case, i.e., *nas dvoje* ‘the two of us (e.g., a man and a woman)’, and *njih troje* ‘the three of them (e.g., mother, father, and son)’. Both examples have the implication that the group consists of members of each gender. They can stand freely before or after the numerals, regardless of their types, either collectives or cardinals as below in (17) and (18).

(17) *Nas trojica smo bila/bili u Beogradu.*

we<sub>GEN</sub> three<sub>COLL</sub> were in Belgrade

‘The three of us were in Belgrade.’

(18) *Tada ćemo se sastretati nas tri.*

Then will meet (one another) we<sub>GEN</sub> three<sub>COLL</sub>

‘The three of us will meet (often) then.’

(Alexander 2006: 205)

The BCS collective numbers distinguish a group of male members only from a group of mixed genders. This special function is effectively inspired by the lack of gender distinction of pronouns in the plural. That is, pronouns can be differentiated in gender by the combination with either collective numerals (males plus females) or collective numeral substantives (males only). As illustrated in (17) and (18), the collective numeral substantive *trojica<sub>COLL</sub>* ‘three’ in (17) represents a male group indicated by the pronoun *nas* ‘we<sub>GEN</sub>’, whereas the cardinal numeral *tri<sub>CARD</sub>* ‘three’ denotes a group of females only.

#### **2.1.5. Feminine Nouns**

Feminine nouns are canonically prohibited from being used with collective numbers and it is encouraged that they be combined with cardinal numerals, i.e., *dve devojke* ‘two girls’, *tri devojke* ‘three girls’, *četiri devojke* ‘four girls’, *pet devojaka* ‘5 girls’, and *deset devojaka* ‘10 girls’ etc. Unlike Russian where feminine nouns are marginally used with collective numerals in colloquial usage, BCS female nouns cannot be used with collective numbers.

#### **2.1.6. Animals**

Collective nouns are, in general, quantified by collective numerals. In BCS it is observed that some collective nouns have the corresponding countable forms. As Stankiewicz (1986) mentioned, there are countable collective plural forms, which must be quantified by collective numerals: *pile* ‘chicken’, *prase* ‘pig’, *tele* ‘calf’, and *jagnje* ‘lamb’ etc.

Some nouns with the neuter suffix *-et* (< Proto-Slavic \*-ent) in the singular utilize a feminine collective noun ending ‘*-ad*’ to express the plural meaning (Magner 1991: 228). These kinds of collective nouns belong to DC III, or ‘*stvar*-type,’ except for the non-modified variations in *-ma*, *-ima*, e.g., *jednom reči* ‘in a word’.

(19) Collective Nouns ending in *-ad* in the plural

		<b>pil</b> ‘chicken’	<b>prase</b> ‘pig’	<b>tele</b> ‘calf’	<b>momče</b> ‘men, crew’
Gen.Sg.		pil-et-a	pras-et-a	tel-et-a	momč-et-a
Pl.	N/A	pil-ad	pras-ad	tel-ad	momč-ad
	G/D	pil-ad-i	pras-ad-i	tel-ad-i	momč-ad-i
	I	pil-ad-i <i>pil-ad-ma</i> <i>pil-ad-ima</i>	pras-ad-i <i>pras-ad-ma</i> <i>pras-ad-ima</i>	tel-ad-i <i>tel-ad-ma</i> <i>tel-ad-ima</i>	momč-ad-i <i>momč-ad-ma</i> <i>momč-ad-ima</i>

These collective nouns in *-ad* are all feminine singular nouns, but have a plural meaning. They usually have plural agreement of the corresponding predicates.<sup>43</sup> This is the same case with *deca* ‘children,’ e.g., *mala deca su<sub>PL</sub> spavala* ‘the little children were sleeping.’ Raguž (1997: §642) claims that either singular or plural of the predicate is correct with these nouns.<sup>44</sup>

(20) Mlada        prasad        su        stigla.

young<sub>F.SG</sub> pig<sub>COLL.F.SG</sub> AUX<sub>PL</sub> arrive<sub>F.SG</sub>

‘The young pigs have arrived.’

(Magner 1991: 228)

<sup>43</sup> *Momčad* ‘men, crew’ is usually accompanied by singular forms, e.g., *mlada momčad je došla* ‘the young people have come’. (Magner 1991: 228)

<sup>44</sup> Raguž (1997) accepts the possibility of either plural or singular for feminine collective nouns in *-ad*.

e.g. > *Telad pije vodu/piju vodu.*  
*Telad je debela./Telad su debela.*  
*Momčad je vesela./Momčad su vesela.*  
*Čeljad je gladna./Čeljad su gladna.*

## 2.2. Inanimate Nouns

Among inanimate nouns, there are two kinds of nouns which can be accompanied by collective numerals: i) PT nouns and ii) nouns denoting ‘pairs of objects’. These nouns are related to the inherent plural meanings of the lexical item. BCS collectives are characterized by the use of agreeing collective numeral forms, so-called *collective numeral adjectives* that quantify both inanimate PT nouns and nouns indicating pairs of objects. As mentioned above, non-agreeing collective numerals are commonly used with animate nouns, while agreeing collective numerals are used with inanimate nouns, e.g., *dvoji opanci* (m.pl.) ‘two pairs of peasant shoes’, *dvoje makaze* (f.pl) ‘two pairs of scissors’, and *dvoja kola* (n.pl) ‘two cars’ etc.

### 2.2.1. Inanimate Pluralia Tantum Nouns

Agreeing collective numerals, namely collective numeral adjectives, behave like regular adjectives in all aspects except two things: i) they are always used in the plural and ii) they do not decline in case-required positions as other collectives. These numeral adjectives enable PT nouns to be quantified to express the cardinality of the item modified. Non-agreeing collective numerals are utilized ‘especially when numbers of living things of mixed genders are indicated’ (Subotić and Forbes 1918: 95). Nouns accompanied by the collective numerals are required to be in the genitive. In other words, adjectival collective numerals are not used with nouns indicating human beings or animate beings.

In BCS inanimate nouns are mostly restricted to use with adjectival collective numerals. These nouns used to be used with old duals, which indicate the cardinality of ‘two’ or nouns of ‘paired objects’. After the loss of duals, collective numerals superseded this function of duals. BCS PT nouns are as follows:

(21) BCS Pluralia Tantum Nouns:

<i>Noun</i>	<i>Meaning</i>	<i>Noun</i>	<i>Meaning</i>
nosila(n.)	‘stretcher’	desni(f.)	‘gums’
usta(n.)	‘mouth’	čakšire (f.)	‘trousers’
leđa(n.)	‘back’	pantalone(f.)	‘trousers’
vrata(n.)	‘door’	klješte(f.)	‘pincers’
kola(n.)	‘carriage’	mašice(f.)	‘tongs’
gaće(f.)	‘drawers, pants’	saonice(f.)	‘sledge’
grudi(f.)	‘breast, chest’	vile(f.)	‘pitchfork’
prsi(f.)	‘breast, chest’	lestvice(f.)	‘ladder’
makaze(f.)	‘scissors’	stube(f.)	‘ladder’
gusle(f.)	‘lute’	merdevine(f.)	‘ladder’
stepenice(f.)	‘stairs’	ljudi(m.)	‘men, people’
novine(f.)	‘newspaper’	terazije	‘weighing-scales’

### 2.2.2. Nouns indicating ‘pairs of objects’

Russian collective numerals distinguish the use of PT nouns from the use of nouns of paired objects, while BCS ones do not differentiate them from each other.

## 3. THE ANALYSIS OF THE BCS COLLECTIVE NUMERALS

This section will perform the semantic analysis of collective numerals and nouns which they modify. This research benefits from Rappaport’s (2006; 2007) lexical approach to agreement mismatch, which is based on the interrelationship between the semantic information of lexicon and its formal interpretation. To analyze “Agreement Mismatch”, whereby agreement targets in different environments share a single controller but morphologically express different values for the same category” (Rappaport 2007: 176), he sought descriptive and formal analyses by formulating a chart of “extended minimal lexical representation”, which is developed from “minimal lexical representation



‘That (male or female) customer came.’

b. Taj      *mušterija*      je      došao.

That<sub>M</sub>   customer<sub>M.SG</sub> AUX<sub>SG</sub>   came<sub>M</sub>

‘That male customer came.’

(Wechsler and Zlatić 2003: 70)

In (22) a dual gender noun *mušterija* ‘a customer’ exhibits the mismatch between the morphological ending *-a* determining DC II and the gender of the referent in the real world. In the case of (22a) the noun *mušterija* ‘a customer’ can be either male or female, when the dual gender noun *mušterija* ‘a customer’ has grammatical agreement. Contrary to (22a), (22b) indicates that *mušterija* ‘a customer’ is male, when the modifier *taj* ‘that’ agrees with the noun. In this case, the [sex: m] feature in R-features determines the [gender: m] feature in F-features regardless of the morphological ending. This is called ‘*the morphosemantic rule*’ as shown in (23).

(23) Dual gender noun in *-a*:

/ <i>mušterija</i> / ‘ a customer ’	
Meaning	Noun
R-features	F-features
	[declension class: II ]
[animal: + ]	[animacy: + ]
[sex: m. ]	[gender: m. ]
[personal: + ]	
[cardinality: + ]	[number: sg. ]

It is observed that the [sex: m] feature of the referent determines the value of grammatical gender, or [gender: m]. That is, the morphosemantic rule applies to solve the problem caused by the mismatch between the semantics and morphology of this lexical item. Taking into account this morphosemantic mismatch, one can understand how the form *mušterija* ‘a customer’ can indicate both a male and a female. Once [case: ] features are

valued from an upper projection, any lexical items are visible and they are ready for spell-out. Assuming that [case: nom] is valued, the word *mušterija* ‘a customer’ spells out as [mušterij-a] in the nominative case, since it has a morphological desinence *-a*, which is determined by its morphology, namely DC II. In other words, the [declension class: ] feature is determined by the morphological ending *-a* of the lexical item, while the [sex: ] feature is determined by the natural sex of a real world referent. If the referent is female, then the [sex: f] feature determines the [gender: f] feature.

### 3.1.1. Gender specification of group members

Unlike Russian collective numerals, whose use is restricted to certain groups of nouns, BCS collective numbers can serve to specify the gender of the group. For example, the collective numeral substantives, i.e., *dvojica* ‘2’, *trojica* ‘3’, *četvorica* ‘4’, *petorica* ‘5’ etc., designate a group of male members only. The collective numerals, i.e., *dvoje* ‘2’, *troje* ‘3’, *četvoro* ‘4’, *petoro* ‘5’ etc., indicate a group of mixed gender, whereas the cardinal numerals, i.e., *dva* ‘2’, *tri* ‘3’, *četiri* ‘4’, *pet* ‘5’, etc., do not include any specification of genders of the components of a group. In other words, the cardinal numeral phrase *tri studenta* ‘three students’ does not reveal any gender specification, but it rules out the case of ‘three female students’. Three female students must be expressed by cardinal numerals plus female nouns, i.e., *tri studentice* ‘three female students’ (Alexander 2006; Magner 1991; Mrazović and Vukadinović 1990). Cardinal numerals used with feminine nouns serve to indicate a group of female only, while cardinal numerals used with masculine nouns cannot serve this function, i.e., do not indicate gender specification of a group. In (24) below the collective numeral substantive *dvojica* ‘2’ indicates a group whose members are all male, while in (25) the collective numeral



*troje* ‘3’ designates a group of mixed gender. Lastly, the cardinal numeral *tri* ‘3’ denotes a group of females only in (26).

(24) Nas dvojica su dobri drugovi.

We<sub>GEN</sub> two AUX<sub>PL</sub> good<sub>PL</sub> friends<sub>PL</sub>

‘Three of us are good friends.’ (Mrazović and Vukadinović 1990: 241)

(25) Uskoro će ih biti troje.

Soon will they<sub>GEN</sub> be three<sub>COLL</sub>

‘Soon they will be three.’ (Alexander 2006: 205)

(26) Tada ćemo se susretati nas tri.

Then will<sub>I,PL</sub> meet we<sub>GEN</sub> three<sub>CARD</sub>

‘The three of us will meet (often) then.’

### 3.1.2. Individuated meaning vs. Collective meaning

In BCS, masculine nouns indicating animate beings can be used with collective numeral substantives to express gender specification or emphasize a collective meaning, or the totality of the group, or the cohesiveness of the group as an aggregate. For neuter nouns indicating animate beings, the collective numerals (e.g., *dvoje*, *troje*, *petoro*, etc.) are employed to express a mixed-gender group and even collective meanings.

(27) ... zbog čega sam otvorio farmu *piladi*

... (is) why AUX<sub>I,SG</sub> opened<sub>M</sub> a farm of chickens<sub>COLL.F.SG.GEN</sub>

i imam 320 *pilića*<sup>45</sup>.

<sup>45</sup> [Dan online, Što grad uništi, vlast ne popravi](#)

and have 320 chickens.

‘...(is) why I opened a chicken farm and (now) have 320 chickens.’

Example (27) exhibits the difference between individuated and collective meanings. The phrase *farmu<sub>ACC</sub> piladi* ‘a farm of chickens’ represents the collectivity as an aggregate. It is the farm where they raise chickens. No individuated meaning is needed for this context, but the phrase *320 pilića* ‘320 chickens’ emphasizes ‘the number of the individuated chickens’ living in the farm now.

A noun *pile* ‘a chicken’ is neuter singular, but when it is quantified by cardinal numerals, it must add the suffix *-et* to its stem. Moreover, it has a different plural form *pilići* ‘chickens,’ which highlights the individuated meaning. (Magner 1991; Maretić 1963; Stevanović 1970). For instance, *jedno pile* ‘one chicken’, *dva pileta* ‘two chickens’, *pet pilića* ‘five chickens,’ etc. The collective feminine form *pilad* ‘chickens’ is used to emphasize the totality of the group of ‘chickens’, but not the individuated meaning of the group members.

## 3.2. Morphological Analysis

### 3.2.1. Adjectival Nouns

The use of adjectival nouns (e.g., *optuženi* ‘accused’, *mladi* ‘young’, *stari* ‘old’, *mrtvi* ‘dead’ etc.) in BCS is not as common as in Russian, but they are found in BCS. Adjectival nouns specify gender in the singular, but not in the plural. Collective numerals can help make such distinctions. Examples (28) and (29) are from headlines of newspapers.

(28) Dvoje optuženih negiralo krivicu.<sup>46</sup>

Two<sub>COLL</sub> accused<sub>GEN.PL</sub> denied<sub>NEUT.SG</sub> guilt<sub>ACC</sub>

‘The two accused denied (their) guilt.’

(29) Osmoro mrtvih u napadu na kriket tim Šri Lanke.<sup>47</sup>

Eight<sub>COLL</sub> dead<sub>GEN.PL</sub> in attack on cricket team of Sri Lanka

‘Eight dead in attack on Sri Lankan cricket team’

As shown in (28) and (29), collective numerals specify a group of mixed gender. In (28), the collective numeral phrase *dvoje optuženih* ‘two accused’ indicates that the two accused are one man and one woman: *Optužena Nada Popović* and *Optuženi Milenko Berić*. The following example (30) is different from (28) and (29) in that the collective numeral substantive *petorica* ‘five’ specifies a group of males only. The use of cardinal numerals does not focus on gender of group members.

(30) Petorica optuženih želi da prizna krivicu.<sup>48</sup>

Five<sub>COLL.SUB</sub> accused<sub>GEN.PL</sub> wanted CONJ admit guilt

‘Five accused wanted to admit their guilt.’

### 3.2.2. Dual-Gender Nouns or Masculine Nouns in –a

Dual-gender nouns are nouns in –a that can be either masculine or feminine, depending on a referent in the real world: e.g., *mušterija* ‘a customer’, *propalica* ‘a dissolute person’, *pijanica* ‘a drunkard’, *pristalica* ‘a follower’ etc.

<sup>46</sup>

<[http://www.b92.net/info/vesti/index.php?yyyy=2007&mm=06&dd=11&nav\\_id=250861&nav\\_category=120&order=priority](http://www.b92.net/info/vesti/index.php?yyyy=2007&mm=06&dd=11&nav_id=250861&nav_category=120&order=priority)>

<sup>47</sup> <<http://www.vesti.rs/Svet/Osmoro-mrtvih-u-napadu-na-kriket-tim-Sri-Lanke-video.html>>

<sup>48</sup> <<http://www.srbijanet.rs/vesti/vesti-iz-sveta/4984-petorica-optuzenih-zeli-da-prizna-krivicu-.html>>

(31) a. on je veliki pijanica.  
 He is heavy<sub>M.SG</sub> drunkard  
 ‘He is a heavy drunkard.’

b. ona je velika pijanica.  
 She is heavy<sub>F.SG</sub> drunkard  
 ‘She is a heavy drunkard.’

(Magner 1991: 229)

These dual-gender nouns in (31) belong to DC II, regardless of gender. The MLR chart below clarifies how the declension class is determined.

(32) MLR for dual gender nouns in *-a*

/ <i>pijanic-a</i> / ‘a drunkard’	
Meaning	Noun
R-features	F-features
	[declension class: <b>II</b> ]
[animal: + ]	[animacy: ]
[sex: ]	[gender: ]
[personal: + ]	
[cardinality: ]	[number: ]

As shown in (32) above, the lexical item *pijanica* ‘a drunkard’ contributes the semantic information to the two sets of features: the [animal: +] and [personal: +] features are valued as R-features, while the [declension class: II] feature – as an F-feature. The [declension class: II] feature is valued in the MLR, which contradicts the default correlation: i.e., [sex: masc.] → [gender: masc.] → [declension class: Im]. Most of all, [sex: ] and [gender: ] features have no values until a real world referent is specified, whether it is male or female. The specified referent determines the values of the features. The value of the [sex: ] feature will determine the value of the [gender: ] feature by default rule: [sex: masc.] → [gender: masc.] or [sex: fem.] → [gender: fem.]. While a

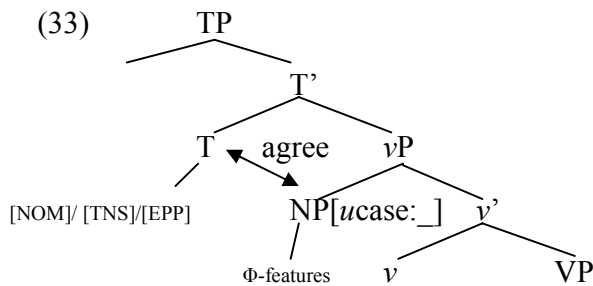
masculine gender noun is typically DC I, that default assignment is blocked by the lexical specification [DC: II], shown in (32).

Among dual-gender nouns, nouns with the [sex: f] and therefore [gender: fem.] features cannot be used with the collective numeral substantives, i.e., *dvojica* ‘2’, *trojica*, *četvorica*, *petorica*, *desetorica*, etc., because the male-gender specification of collective numeral substantives in *-ica* is in conflict with the value of [gender: f] of female nouns.

### 3.3. Syntactic Analysis

#### 3.3.1. Theoretical Background: Feature-Sharing, Agree, and Spell-Out

As a means of spreading features, *Agree* is the fundamental mechanism of subject-predicate agreement, concord and case assignment. As shown in (34) below, all these syntactic operations occur under the operation *Agree*. *Spell-out* is the last stage of a series of syntactic derivations.



Both [case] feature and  $\phi$ -features are essential factors for subject-predicate agreement. These factors are also associated with the object of a transitive verb. A functional head *little v*<sup>°</sup> assigns accusative case onto a direct object. Concretely speaking, in (34) and (35), a functional head *v*<sup>°</sup> over VP of the verbs assigns the [acc] case to its direct objects, i.e., [*dobrog čoveka*]<sub>GEN-ACC</sub> ‘a good-natured person’, [*stare prijatelje*]<sub>ACC</sub> ‘old friends’,

[*ova dva deteta*]<sub>ACC</sub> ‘these two boys’, and [*ovo petoro dece*]<sub>ACC</sub> ‘these five children’, respectively.

(34) BCS non-quantified noun phrases

- a. Teško je naći      dobrog                      čoveka.<sup>49</sup>  
 hard    is find    a good-natured<sub>ACC-GEN</sub>    person<sub>ACC-GEN</sub>  
 ‘It is hard to find a good person.’

- b. Sretao    sam      stare      prijatelje...<sup>50</sup>  
 (I) met AUX<sub>I.SG</sub>    old<sub>ACC.PL</sub>    friends<sub>ACC.PL</sub>  
 ‘I met old friends...’

(35) BCS quantified noun phrases

- a. Majka    je      videla      ova      dva                      deteta.  
 Mom AUX<sub>3.SG</sub>    saw<sub>F.SG</sub>    these<sub>PAUC</sub>    two<sub>CARD.M.PAUC</sub>    boys<sub>GEN.SG</sub>  
 ‘Mom saw these two boys.’

- b. Majka    je      videla      ovo      petoro                      dece.  
 Mother AUX<sub>3.SG</sub>    saw<sub>F.SG</sub>    these<sub>QUANT</sub>    five<sub>COLL.QUANT</sub>    children<sub>GEN</sub>  
 ‘Mom saw these five children.’

When a noun is assigned accusative case by  $v^\circ$ , the  $\phi$ -features of that noun are reflected in the form of the accusative case. For example, the lexical stems of (34a) and (34b) are {*čovek*-} and {*prijatelj*-}, respectively. These nouns have [animacy: +] feature in their MLR. When animate nouns are used as direct objects of transitive verbs in the singular, the [animacy: +] feature of the nouns makes the accusative form identical to the genitive

<sup>49</sup> <http://nasdvoje.mojblog.com/p-tesko-je-naci-dobrog-coveka-/139781.html>

<sup>50</sup> [http://www.bosanskaposta.no/vise.php?article\\_id=369&category\\_id=7](http://www.bosanskaposta.no/vise.php?article_id=369&category_id=7)

form; therefore, the phrase {*dobr- čovek-*} is spelled out as *dobrog čoveka* ‘a good-natured person’ as in (34a). This is well-known as the Animacy Rule (ACC=GEN). The Animacy Rule in BCS applies only to the singular paradigm, but not to the plural paradigm, which is shown as in (34b). Despite the [animacy: +] feature of the lexical item associated with the Animacy Rule, plural nouns in direct object positions are used as accusative case.

BCS numerals also exhibit unusual morphosyntactic properties: i) indeclinable numerals in case-required positions, ii) the use of paucal case, which is syncretic with the genitive case, iii) the lack of the oblique case forms of higher numerals, etc. These properties are closely related to the headedness of numeral phrases. BCS numerals appear to be heads of numeral phrases. However, this hypothesis is contradicted by NP-hypothesis in that oblique cases of declinable numerals reveal homogeneous morphosyntax, where lexical case is assigned onto a noun and modifiers, including numerals, agree with the noun. It seems in (35a) that the numeral *dva* ‘2’ assigns the genitive case to the noun *dete* ‘a child’. Yet the numeral *dva* is selected by the gender of the noun *dete*. That is, the numeral *dva* agrees with the noun *dete* in number and gender, neuter singular. Despite the controversy of the headedness of BCS numerals, this dissertation will examine BCS collective numerals on the basis of the NP-hypothesis.

As in (35), those numeral phrases *ova dva deteta* ‘these two children’, *ovo petoro dece* ‘these five children’ stand in the direct object position, which requires the accusative case. However, those numerals remain in the nominative case. The problem is how the nominative case is assigned to those numerals in the direct object position. This dissertation adopts the concept of ‘abstract quantitative case’ by Rappaport (2002; 2003b) to analyze indeclinable BCS numerals. The details on the *abstract quantitative case* are presented in the next section.

### 3.3.2. *Abstract Quantitative Case*

To recapitulate the mechanism of abstract case discussed in the previous chapters, quantitative case of numerals is “abstract case”, which is “never associated with a distinctive morpheme, but rather is only expressed in the form of a syncretism.” (Rappaport 2003b: 10-11). This pre-valued abstract quantitative case feature spread by Agree. This abstract [case: quantitative] feature of numerals is copied to the nouns which the numerals modify and, in turn, those quantitative cases are spelled out by morphological rules via Agree. As for BCS lower numerals (e.g., 2, 3, 4), the quantitative case is spelled out as paucal case: the numeral itself is spelled out as paucal case, which is syncretic with the nominative case, while the noun – as paucal case syncretic with the genitive singular. In other words, the quantitative case is realized by adding *-a/-e* for masculine/neuter nouns and feminine nouns, respectively. This direct paucal spell-out, which occurs by adding *-a/-e* desinence to the stem of words, applies to modifiers. In the case of higher numerals and collective numerals, the quantitative case of nouns is unconditionally spelled out by syncretism with the genitive case in nouns. The spell-out rules of abstract quantitative case apply to all cases of indeclinable numerals and only to direct case positions of declinable numerals. In oblique cases, an unvalued case feature of numerals renders lexically assigned case to be valued onto noun heads. The spell-out rules for BCS numerals are summarized as follows:

#### (36) Spell-Out Rules for BCS numerals

	<u>Abstract case</u>	<u>Adjectivals</u>	<u>Nouns</u>
a) lower:	[case: paucal] →	[case: paucal]	[case: gen.; num: sg.]
b) higher/collective:	[case: quant.] →	[case: gen; num: pl.]	[case: gen.; num: pl.]



As shown in (36), the adoption of paucal and quantitative case licenses numeral phrases with those cases to stand in positions which require another case. That is, indeclinable numerals can be accounted for with these cases. For instance, the paucal and quantitative cases on numerals in (36a) and (36b) are both syncretic with the nominative-accusative case, so that they can remain in the direct object position. As for nouns, the paucal case copied onto nouns is realized as the genitive singular, while the quantitative case – as the genitive plural. Even in oblique cases indeclinable numerals are observed as follows:

- (37) hladnjak      sa              dvoja              vrata  
 refrigerator   with<sub>INSTR</sub>   two<sub>COLL.N.PL</sub>   doors<sub>N.PL</sub>  
 ‘a/the refrigerator with two doors’

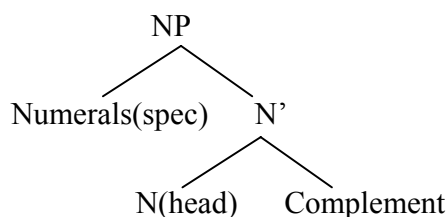
As seen in (37), the collective numeral adjective *dvoja* does not decline after the preposition *s(a)* ‘with’, which requires instrumental case. In this case, the collective numeral adjective has the [case: paucal] feature, which is syncretic with nominative case. In contrast, the declinable form of the numeral in *sa dvojim vratima* ‘with two doors’ has the [case: instrumental] feature, because the numeral does not have pre-valued paucal case in oblique cases. Declinable numerals are found in literary contexts, whereas indeclinable numerals are predominant in contemporary standard BCS (Alexander 2006; Magner 1991; Mrazović and Vukadinović 1990; Raguž 1997; Šipka 2007).

### 3.3.3. Headedness of the BCS Collective Numbers

On a par with contemporary standard Russian (henceforth, CSR), BCS numerals have N-headed structure, regardless of the declinability of numerals. Collective numeral substantives (e.g., *dvojica* ‘2’, *trojica* ‘3’ *četvorica* ‘4’, *petorica* ‘5’ etc.) are head nouns,

which have formal feature. BCS collective numerals (e.g., *dvoje* ‘2’, *troje* ‘3’, *četiri* ‘4’ and *petoro* ‘5’, etc.) are modifiers, which are spelled out in the quantitative case by syncretism with the nominative case, and the nouns which the collective numerals modify serve as the heads of the whole phrases. Collective numeral adjectives (*dvoji*, *dvoje*, *dvoja* ‘two’ etc.) are pure adjectives in all syntactic respects: these numeral adjectives modify the following head nouns, matching the  $\phi$ -features of the heads. Regardless of whether declinable or indeclinable numerals, BCS numerals have the NP-headed structure of numeral phrase.

(38) The Structure of BCS Numerals



As represented in (38) above, BCS numeral phrases are headed by  $N^\circ$  with numerals on the spec-of-NP. In CSR, higher cardinal numerals do not exhibit the properties of the Animacy Rule in direct object positions, as seen in the numeral phrase [*èti*<sub>GEN</sub> *pjat*’<sub>QUANT</sub> *detej*<sub>GEN</sub>]<sub>ACC</sub> ‘these five children’: the pre-valued abstract quantitative case is directly spelled out by adding zero-desinence to the stem of the numeral, i.e., [case: quant.]  $\rightarrow \emptyset$ . In contemporary BCS, collective numerals rarely decline, even when positioned after prepositions.<sup>51</sup>

<sup>51</sup> While it is not the common, but the collective numerals are sometimes declined. Their declension paradigm is as follows:

Nom./ Acc./Voc.	dvoje	troje	četvoro
Gen.	dvoga, dvojga	troga, trojga	četvoroga
Dat./ Loc.	dvoma, dvojemu	troma, trojemu	četvorma, četvoroma
Instr.	dvoma	troma	četvorma

- (39) Šta od ovo troje najviše voliš?  
 What of<sub>GEN</sub> these<sub>QUANT</sub> three<sub>COLL.QUANT</sub> best like  
 ‘What do you like best of these three?’ (Mrazović and Vukadinović 1990: 240)

- (40) Otišla je na odmor sa svoje  
 Set off AUX<sub>3.SG</sub> for vacation with<sub>INSTR</sub> her own<sub>QUANT</sub>  
*čtvoro* dece.  
 four<sub>COLL.QUANT</sub> children<sub>COLL.GEN</sub>  
 ‘She set off for vacation with her (own) four children.’  
 (Mrazović and Vukadinović 1990: 240)

As in (39) and (40) above, the collective numerals are indeclinable. Their collective numeral forms are the result of direct spell-outs from the stems of the collective numerals, adding *-o/-e* desinence to the collective numeral stems: the neuter singular forms in *-o/-e* is in the paucal case, which is syncretic with default form (neuter singular). Another characteristic of BCS collective numbers is that attributive modifiers appear to agree with numerals as in (41) and (42) below.

- (41) a. *ova* dva studenta ‘these two students’ (no gender specification)  
 b. *ove* dve studentice ‘these two female students’  
 c. *ovih*/\**ovo* pet studenata ‘These five students’
- (42) a. *ovo* dvoje dece ‘these two children’  
 b. *ova* četvorica optuženih ‘these four accused’  
 c. *ova* dvojica vrata ‘these two doors’

However, the spell-out rules for adjectives account for this phenomenon. Example (41c) supports the NP-hypothesis, because the genitive plural form of the demonstrative pronoun *ovih* ‘these’ does not agree with the higher numeral *pet* ‘5’. If the numeral *pet* were the head of the phrase, the demonstrative pronoun *ovih* would agree with the head *pet*, which had no  $\phi$ -features except the [case] feature. This problem can be solved by employing abstract quantitative case. Under the operation Agree, the pre-valued abstract quantitative case of a numeral is copied onto a head noun and even onto a modifier, or adjective. Since modifiers must agree with head nouns, their spell-out results are the same as those of head nouns. In (41a) the paucal case is spelled out by the genitive singular (by adding the desinence *-a* for masculine and neuter nouns and *-e* for feminine nouns). As soon as the head noun {*student-*} receives the abstract [case: paucal] from the numeral {*dv-*}, the demonstrative pronoun {*ov-*} also receives the same [case: paucal]. The [case: paucal] feature is spelled out by a direct suffixation of paucal desinence *-a/-e* to the lexical stem of all these nouns and modifiers. As a result, the [case: paucal] feature of the noun is syncretic with the [case: genitive] and [number: sg.] features. However, the [case: paucal] feature of modifiers is different from the [case: genitive] feature of modifiers: for instance, *ova dva dobra studenta* ‘these two good students’ vs. *od ovog dobrog prijatelja* ‘from a good friend’. In (42b) collective numeral substantives demonstrate that they are nouns which have the [number: sg.], [gender: f.], [case: nom] features that the demonstrative pronoun *ova* ‘this’ agree with. In (42c), the demonstrative pronoun *ova* ‘these (neut. pl.)’ is the result of agreement with the head noun in the neuter plural. The spell-out rules for modifiers are the same as those of nouns in that adjectival modifiers must agree with head nouns in a series of  $\phi$ -features and case (see the spell-out rules in (36)).

### 3.3.3.1. The Collective Numeral Substantives: *dvojica, trojica... petorica*

Like collective numerals and collective numeral adjectives, collective numeral substantives express a special meaning of the collectivity as a whole and a specification of gender, i.e., the members of a group are all males, but not mixed genders or all females. The collective numeral substantives also have the same syntactic distribution as nouns. For example:

- (43) dvojica            pevača            obišla            su  
Two<sub>COLL.NOM</sub> singers<sub>GEN.SG</sub> went around AUX<sub>PL</sub>  
Parlament    i    Bakingemsku palatu...<sup>52</sup>  
Parliament   and   Buckingham Palace...  
'Two singers went around Parliament and Buckingham Palace...'

Collective numeral substantives are distinguished by their independent case and  $\phi$ -features. In other words, as a part of speech they are nouns, and, therefore, they have the corresponding case and  $\phi$ -features, with which their modifiers agree. They are feminine singular nouns in *-ica*, but ironically they specify a group whose members are all males.

As shown in (43) above, the collective substantive *dvojica* '2' is the head of the phrase, because it assigns the genitive case to its complement. The following example (44) helps to illustrate where the substantives merge in the structure and the complement is base-generated inside it.

- (44) [<sub>NP</sub>  $\emptyset$  [<sub>N'</sub> [<sub>N</sub> dvojica] [<sub>NP</sub>  $\emptyset$  [<sub>N'</sub>  $\emptyset$  [<sub>N</sub> pevača<sub>GEN.PL</sub>]]]] ]]

The collective numeral substantives (e.g., *dvojica, trojica, petorica* etc.) differ from the collective numerals (e.g., *dvoje, troje, petoro*, etc.) in that the former are nouns

<sup>52</sup> <http://www.podrum.net/modules/news/article.php?storyid=1702>

possessing their own  $\phi$ -features, while the latter are modifiers which do not have their own  $\phi$ -features. Furthermore, the collective substantives merge as the head of NP, while the collective numerals merge as the specifier of NP. The following example (45) exemplifies the declension of the collective substantives.

- (45) *Kratka priča o dvojici starih prijatelja.*  
 short story about two<sub>COLL.LOC</sub> old<sub>GEN.SG</sub> friends<sub>GEN.SG</sub>  
 ‘A short story about two old friends.’

It is observed that the head noun *dvojica* is declined after the preposition *o* ‘about’, but its complement is not affected by the inherent case of the preposition, because it is still in the domain of the genitive case assigned by its head noun *dvojica*. Compare the following two sentences.

- (46) *S dvojicom starih prijatelja*  
 With two<sub>COLL.INSTR</sub> old<sub>GEN.PL</sub> friends<sub>GEN.PL</sub>  
 ‘With two old friends’
- (47) *S bratom mojeg prijatelja*  
 With brother<sub>INSTR.SG</sub> my<sub>GEN.SG</sub> friends<sub>GEN.SG</sub>  
 ‘With my friend’s brother’

As illustrated above, the head nouns possess a case marking and  $\phi$ -features as inherent features of lexical items. Most of all, the case assigned by the preposition cannot affect the case of the complements of the nouns. From this point of view, the collective numeral substantives are nouns with numerical value.

### 3.3.3.2. Collective Numerals: *dvoje, troje, četvero...petoro*

Collective numerals designate the mixed gender specification of a group, that is, the heterogeneous combination of genders: male(s) and female(s). A group of females is modified by cardinal numerals, e.g., *tri prijateljice* ‘three female friends’ and *pet studentica* ‘five female students’ etc. Collective numerals usually do not decline after prepositions, but in formal contexts they can decline, i.e., *dvoga/dvojega* (gen.), *dvoma/dvojemu* (dat./loc.), *dvoma* (instr.), *četvoroga/četveroga* (gen.), *četvorma/četverma* and *četvoroma/četveroma* (dat./loc.), and *četvorma/četverma* (instr.) (Alexander 2006; Daničić 1863; Mrazović and Vukadinović 1990; Novaković 1894; Šipka 2007; Stevanović 1970).

- (48) Izašao je u grad sa dvoje prijatelja/  
(he) went out AUX to town with<sub>INSTR</sub> two<sub>COLL.QUANT</sub> friends<sub>GEN.PL</sub> /  
??sa dvoma prijateljima.<sup>53</sup>  
with<sub>INSTR</sub> two<sub>INSTR</sub> friends<sub>INSTR</sub>  
‘He went out to the town with her two friends.’

- (49) Roditelji sa dvoje dece stanuju u velikom stanu...<sup>54</sup>  
parents with<sub>INSTR</sub> two<sub>COLL.QUANT</sub> children<sub>GEN.PL</sub> live<sub>3.PL</sub> in big apartment...  
‘Parents with two children live in the big apartment.’

As shown in (48) and (49), in contemporary BCS indeclinable forms of collective numerals are predominant. Example (48) shows that the indeclinable form *sa dvoje*

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<sup>53</sup><<http://forum.fil.bg.ac.yu>> [filoloski facultet Univerziteta u Beogradu > kultura – nauka – naša struka > lingvistika](http://forum.fil.bg.ac.yu/filoloski-facultet-Univerziteta-u-Beogradu-kultura-nauka-naša-struka-lingvistika)

<sup>54</sup> <http://www.sredidom.com/idejna-resenja/vest/roditelji-sa-dvoje-dece-u-bihacu/>

*prijatelja* ‘with two friends’ is preferred to the declinable form *sa dvoma prijateljima* ‘with two friends’.

### 3.3.3.3. The Collective Numeral Adjectives: *dvoji* (m.) / *dvoje* (f.) / *dvoja* (n.)

The collective numeral adjectives are pure adjectives, which agree with their head nouns in case and  $\phi$ -features, i.e., *dvoji opanci* (m.pl.) ‘two pairs of peasant shoes’, *dvoje čarape* (f.pl.) ‘two pairs of socks (or stockings)’, and *dvoja kola* (n.pl.) ‘two cars (literally two pairs of wheels)’ etc. These numeral adjectives, as mentioned before, are commonly used with nouns indicating inanimate things.

(50) Ovi                      dvoji                      opanci  
 These<sub>M.NOM.PL</sub> two<sub>COLL.ADJ. M.NOM.PL</sub> shoes<sub>M.NOM.PL</sub>  
 ‘These two (peasant) boots’

(51) Ove                      dvoje                      čarape  
 These<sub>F.NOM.PL</sub> two<sub>COLL.ADJ. F.NOM.PL</sub> socks<sub>F.NOM.PL</sub>  
 ‘These two socks’

(52) Ova                      dvoja                      kola  
 These<sub>NEUT.NOM.PL</sub> two<sub>COLL.ADJ.NEUT.NOM.PL</sub> cars<sub>NEUT.NOM.PL</sub>  
 ‘These two cars’

### 3.3.3.4. NP-hypothesis of Collective Numeral Phrases

In contemporary BCS, numeral phrases seldom decline in positions required to be case-marked. BCS cardinal numerals and collective numbers (collective numeral



substantives, collective numerals, and collective numeral adjectives) all have NP-headed phrasal structure, regardless of whether the numerals decline.

#### 3.3.3.4.1. Animacy Rule (Genitive=Accusative)

The animacy feature is one of significant factors that determine headedness. The Animacy Rule applies within the domain of *vP*. In other words, the [animacy: +] feature of masculine nouns of masculine declension makes the [case: accusative] of the nouns syncretic with the [case: genitive]. The Animacy Rule in BCS is defined as follows:

##### (53) Animacy Rule (Genitive=Accusative)

For masculine animate nouns belonging to masculine declension, *animate* nouns have accusative case, which is syncretic with the *genitive* case in the singular paradigm (Acc.=Gen.); *inanimate* nouns have an accusative case, which is syncretic with the *nominative* case (Acc.=Nom.)

##### (54) Video sam ovog mladog čoveka. (accusative = genitive)

Saw<sub>M.SG</sub> AUX this<sub>ACC..SG</sub> young<sub>ACC..SG</sub> person<sub>ACC..SG</sub>

'I saw this young person.'

##### (55) video sam ova dva mlada čoveka.

Saw<sub>M.SG</sub> AUX this<sub>ACC..SG</sub> two<sub>CARD</sub> young<sub>ACC..SG</sub> person<sub>ACC..SG</sub>

'I saw these two young.'

As shown above, the numerically quantified phrase (55) is different from the non-quantified noun phrase (54). The Animacy Rule applies to the direct object of (54), but not to that of (55). It seems that the numeral head *dva* '2' prevents the Animacy Rule from occurring in (55), but the numeral *dva* agrees with its head noun *čoveka* 'persons'.

In other words, the lower numeral *dva* ‘two’ is selected by the [gender: m/n] feature of the noun which the numeral modifies. The real reason why the Animacy Rule does not occur is that the noun head *čovek* ‘person’ is spelled out as paucal case, which is syncretic with the genitive singular. Furthermore, a series of modifiers, i.e., the demonstrative pronoun *ova* ‘these’, the lower numeral *dva* ‘2’, and the adjective *mlada* ‘young’, are also spelled out as the paucal case to agree with the head noun *čovek* ‘a person’ in the genitive singular: [case: paucal] → [case: paucal] for modifiers by adding –*a* desinence for the masculine noun to the stem of the numeral {*dv-*}, whereas [case: genitive]/[number: sg.] for the noun {*čovek-*} by syncretism. The paucal case for a series of modifiers is different from the genitive singular form of those modifiers as in (54) and (55).

#### 3.3.3.4.2. Attributive modifiers

As mentioned by Zwicky (1985), concord is one of the best indicators of headedness along with the criterion of the locus of morpho-syntactic case marking. In this respect, BCS attributive modifiers exhibit interesting syntactic properties, which are different from Russian modifiers. As an example, one can compare BCS attributive modifiers with Russian ones.

- (56) a. *Эти / \*это                двое    детей                не играли*<sup>55</sup>...
- these<sub>PL</sub>/\*these<sub>NEUT.SG</sub> two<sub>COLL</sub> children<sub>GEN.PL</sub> not played...
- ‘These two children didn’t play...’

- b. *Вы подумали,                как    обеспечивать    этих    двоих    детей?*<sup>56</sup>

<sup>55</sup> <http://www.7ya.ru/pub/article.aspx?id=3830>

You thought<sub>PAST.PL</sub>, how protect<sub>INF</sub>, these<sub>ACC</sub> two<sub>ACC</sub> children<sub>ACC.PL</sub>

‘Did you think about how to protect these two children?’

- (57) a. *Ovo dvoje dece je na Kosovu završilo*  
 these<sub>NEUT.SG</sub> two<sub>COLL</sub> children<sub>GEN.PL</sub> AUX in Kosovo completed<sub>NEUT.SG</sub>  
*devet razreda osnovne škole...*<sup>57</sup>  
 nine grades elementary school<sub>GEN.SG</sub>  
 ‘These two children completed nine grades of elementary school in  
 Kosovo’

- b. ... da na put izvedem ovo dvoje dece<sup>58</sup>  
 ...that<sub>CONJ</sub> on way (I) lead<sub>I.SG</sub> out these<sub>NEUT.SG</sub> two<sub>COLL</sub> children<sub>GEN.PL</sub>  
 ‘...(so) that I may put these two children on the right path.’

To begin with, in both BCS and CSR, attributive modifiers must be in the domain of internal agreement, or concord relationship with the head of the phrase. As shown in (56a) above, Russian attributive modifiers are spelled out as the quantitative case, which is syncretic with the nominative case: [case: quant.] → [case: nominative]/\_\_\_[in subject positions]. That is, the noun is the head of the numeral phrase. In direct object positions the [case: quant.] feature of the collective numeral *dvoe* ‘2’ in (56b) is spelled out as the [case: genitive]/\_\_\_[animacy: +]. The adjective agrees with the head nouns in case and features. In contrast to Russian, BCS collective numerals are spelled out as the quantitative case by adding –e/-o endings to the stem of the numerals, e.g., {*dvoj*-}: [case: quant.] → [case: quant.] + {-e/-o}. As shown in (57), this [case: quant.] feature is

<sup>56</sup> <http://virparty.borda.ru/?1-6-30-00000045-000-0-0>

<sup>57</sup> <http://www.google.com>

<sup>58</sup> <http://www.aimpress.ch/dyn/pubs/archive/data/200007/00722-003-pubs-pod.htm>

copied onto the noun *deca* ‘children’ and the demonstrative pronoun *ovo* ‘these’, which are spelled out as [case: genitive] and [case: quantitative], respectively.

### 3.3.4. Subject-Predicate Agreement

#### 3.3.4.1. Agreement and Default

Subject-predicate agreement is the result of reciprocal interaction between a subject and a predicate. In Corbett’s (1983) terms, it is a syntactic operation between an agreement controller and an agreement target. During this syntactic process, an agreement controller shares its  $\phi$ -features with an agreement target, and they agree with each other in person, number, gender and case. From the Minimalist point of view,  $T^\circ$  assigning [nom] case to an NP is an agreement target, whereas the NP receiving [nom] case feature is an agreement controller, which values its  $\phi$ -features onto  $T^\circ$  so that the predicate agrees with the subject (Chomsky 1995).

The most significant factor in subject-predicate agreement is whether the nominative case is present in a sentence. To recap, the presence of the nominative case enables grammatical agreement to occur, while the lack of the nominative case triggers the use of default, whose form is in the neuter singular.

- (58) Dva                      američka                      studenta                      su     $\sqrt{\text{bila}}/\sqrt{\text{bili}}$                       u Beogradu.  
       two<sub>CARD.PAUCAL</sub> American<sub>PAUCAL</sub>    students<sub>PAUCAL</sub> AUX<sub>PL</sub> be<sub>PAUCAL</sub>    in Belgrade  
       ‘(The) two American students were in Belgrade.’

In (58), the lower cardinal numeral *dva* ‘2’ and the adjective *američka* ‘American’ agree with the head *studenta* ‘students’, which is in the paucal case syncretic with the genitive case. With regard to subject-predicate agreement, the predicate of the sentence *su bila*

‘were’ is used: *su* is an auxiliary and *bila* is a predicate participle (which will be called later *l*-participle). Example (58) demonstrates that the noun *studenta* ‘students’ is the head of the sentence, so that the [number: ] and [gender: ] features value onto the predicate *l*-participle. The uninterpretable [number: ] and [gender: ] features are specified by the lexical items. The numeral *dva* and the adjective *američka* are also spelled out as the paucal case by copying the [case: paucal] feature from the head noun *studenta* ‘students’.

- (59) *Petoro američkih studenata je bilo u Beogradu.*  
 five<sub>COLL.QUANT</sub> American<sub>GEN.PL</sub> student<sub>GEN.PL</sub> AUX<sub>NEUT.SG</sub> be<sub>NEUT.SG</sub> in Belgrade  
 ‘(The) five American students were in Belgrade.’

As shown in (59), the collective numeral *petoro* ‘five’ is spelled out in the quantitative case, while the [case: quant.] feature is spelled out as the genitive case for the adjective *američkih* and the noun *studenata*, respectively. The [case: quantitative] feature of the head noun (the lack of the nominative case) renders the occurrence of the default form of the predicate *je*, and at the same time, the predicate participle form *bilo* is used in the neuter singular form (i.e., default), because the [case: quant.] is used instead of [case: nominative], which would trigger subject-predicate agreement. As in (58) the paucal case of the head noun *studenta* ‘students’ can trigger semantic agreement, while higher cardinal or collective numerals cannot trigger semantic agreement. In this respect, the paucal case behaves more like the nominative case rather than the quantitative case.

### 3.3.4.1.1. The collective numeral substantives

Collective numeral substantives are noun-like numerals. In other words, they have the case feature and  $\phi$ -features that are associated with nouns. Collective numeral substantives merge on  $N^\circ$  as lexical heads. Collective numerals and collective numeral adjectives merge on the spec-of-NP, while collective numeral substantives merge on the head of NP. The structure of the NP in (60) is represented by (61)

(60) Dvojica su *došla* kući.

two<sub>COLL</sub> AUX<sub>PL</sub> came<sub>F.SG</sub> home

‘Two (males) came home.’

(61) [<sub>NP</sub>  $\emptyset$  [<sub>N'</sub>  $\emptyset$  [<sub>N</sub> *dvojica*]]]]]]]

Example (60) above represents the use of the finite auxiliary *su* in the plural, i.e., in semantic agreement and an *l*-participle in the feminine singular, i.e., in grammatical agreement, which is co-referential with the feminine singular noun, *dvojica* ‘two’. The collective numeral substantive *dvojica* ‘2’ can also take an alternative plural form for the *l*-participle like (62) as a result of semantic agreement.

(62) Dvojica su *došli* kući.

two<sub>COLL</sub> AUX<sub>PL</sub> came<sub>M.PL</sub> home

‘Two (males) came home.’

With regard to the use of *l*-participles, the grammatical form, i.e., feminine form, is standard, since *dvojica* ‘2’ is a feminine noun indicating a numerical meaning. The semantic form, i.e., masculine plural, is acceptable, because collective numeral substantives indicate male gender specification.

### 3.3.4.1.2. The collective numerals

The collective numerals specify a group of mixed gender. They merge with N' as the spec-of-NP. The case feature on the head noun of NP is copied onto its modifiers and is spelled out according to spell-out rules by syncretism. The collective numerals on the spec-of-NP convey pre-valued abstract quantitative case, which is associated with case realization. The quantitative case of a head noun is spread onto its modifiers and then the quantitative case is spelled out for each. As shown in (63), the abstract [case: quant.] case of the collective numeral is realized by syncretism with a direct spell-out rule, adding the desinence *-e/-o* to the stem of the numeral {*dvoj-*}. At the same time, the noun head with [case: quant.] feature is spelled out by unconditional spell-out rule: [case: quant.] → [case: genitive] for nouns.

- (63) Dvoje            dece            je            došlo            kući.  
 Two<sub>COLL.QUANT</sub> children<sub>GEN.PL</sub> AUX<sub>3.SG</sub> came<sub>NEUT.SG</sub> home  
 'Two children came home.'

In (63) the collective noun *dvoje* '2' is in the quantitative case, while the head noun *dece* 'children' is in the genitive case, which triggers the default form of subject-predicate agreement.

- (64) Dvoje            ranjenih    su            bili            Šiptari.<sup>59</sup>  
 Two<sub>COLL.QUANT</sub> wounded AUX<sub>PL</sub> were<sub>MASC.3.PL</sub> Albanians  
 'The two wounded were Albanians.'

<sup>59</sup> <http://www.politika.rs/ilustro/2073/prvi.htm>

Cf. There are another words indicating Albanians: *Albanac* and *Alбанка*. *Šiptari* is used to refer to Albanians in a derogatory way. Some people argue that *šiptari* has no derogatory connotation.  
 <[http://www.opendemocracy.net/article/conflicts/reimagining\\_yugoslavia/kosova\\_albania\\_identity](http://www.opendemocracy.net/article/conflicts/reimagining_yugoslavia/kosova_albania_identity)>

As shown in (64), the collective numeral phrase *dvoje ranjenih* ‘(the) two wounded’ can cause semantic agreement with the finite auxiliary verb *su*<sub>3.PL</sub> and the *l*-participle *bili*<sub>MASC.PL</sub> instead of grammatical agreement. The occurrence of semantic agreement is related to number values of cardinal or collective numerals: lower numerals can trigger semantic agreement, while higher numerals cannot.

### 3.3.4.1.3. The collective numeral adjectives

Collective numeral adjectives have similar syntactic distribution to that of adjectives. They agree with a head noun in case and  $\phi$ -features. In other words, a noun *vrata* ‘a door’ selects the form of the collective numeral adjective *dvoja* ‘2’, because the neuter plural form of the collective numeral adjective *dvoja* ‘2’ must agree with the neuter plural form of the noun *vrata* ‘a door’. If another noun *makaze* ‘a pair of scissors’ is used, the feminine plural noun *makaze* selects the feminine plural form of the collective numeral adjective *dvoje*. The collective numeral adjectives, however, need not decline after prepositions as in (65) and (66).

(65) Dvoja                      vrata              su              otvorena              za vas.

two<sub>COLL.ADJ.NEUT.PL</sub> door<sub>NEUT.PL</sub> AUX<sub>PL</sub> open<sub>NEUT.PL</sub> for you

‘The two doors are open for you.’

(66) Coupe je              auto      sa                      dvoja                      vrata.

coupe is<sub>3.SG</sub> car      with<sub>INSTR</sub> two<sub>COLL.ADJ.NEUT.PL</sub> doors<sub>NEUT.PL</sub>

‘A coupe is a car with two doors.’



### 3.3.4.2. Co-occurrence with Pronoun

When used with personal pronouns (e.g., *mi* ‘we’, *vi* ‘you’, *oni* (m.)), the collective numbers are preceded by personal pronouns in the genitive like (67) and (68).<sup>60</sup> Sometimes, they are followed by the personal pronouns. For example:

(67) Šta kažete, *vas* dvoje?

What say<sub>2.PL.</sub> you<sub>GEN</sub> two<sub>COLL</sub>

‘What do you say, you two?’ (Alexander 2006: 205)

(68) Idemo *nas* trojica.

Go<sub>1.PL</sub> we<sub>GEN</sub> three<sub>COLL.F.SG.NOM</sub>

‘The three of us are on our way.’ (Alexander 2006: 205)

In addition, subject-predicate agreement is important when personal pronouns are used with collective numbers. In the case that personal pronouns are used with collective numerals or collective numeral substantives, personal pronouns agree with the predicate through semantic agreement. Re-stating what Vondrák (1928: 432, cf. Miklosich 1868) points out, Corbett (1983: 178) claims, that when there are conflicting person features in a sentence, a personal hierarchy must be employed: “the first person has priority over the second and the second over the third.”

(69) OCS: **ОТЦЬ ТВОИ И АЗЪ СРЪБАШТА ИСКАХОВѢ** (1<sup>st</sup> pers. dual) **ТЕБЕ**

Father your and I grieving were seeking you

(Luke 2.48, qtd by Corbett 1983: 178, originally by Vondrák, 1928: 432)

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<sup>60</sup> In principle, 3<sup>rd</sup> personal pronoun *one* (f.pl.) cannot be combined to be used with the collective numerals, and instead it is used with cardinal numerals, e.g., *nas tri* ‘three of us’, *vas četiri* ‘four of you’, and *ih dva* ‘two of them’. In case of *ona* (n.pl.), it is neuter plural, so that cannot refer to human beings.

(70) SC: Ti i Milan radićete (2<sup>nd</sup> pers. pl.) zajedno.

You and Milan shall work together

(qtd by Corbett 1983: 178, originally by Gudkov 1969: 91)

As shown in (69) and (70), it is obvious that there is a *Person Hierarchy* such that the first person has priority over the second and third persons and the second person, over the third person. Now let us return to the collective numerals conjoined with personal pronouns. Examples (71) and (72) below illustrate that the personal hierarchy is well observed and applies even to collective numbers. In (72) the collective numeral substantive *dvojica* ‘2’ does not trigger grammatical agreement. Subject-predicate agreement occurs semantically based on the personal pronoun with the [person: 2<sup>nd</sup>] feature, even though the personal pronoun is in the genitive case. The semantic agreement of personal pronouns is observed in (71) as well.

(71) *Nas dvoje ćemo da budemo* sledeće godine u Crnoj Gori.

We<sub>GEN</sub> two<sub>COLL</sub> will<sub>I.PL</sub> CONJ be<sub>I.PL</sub> next year in Montenegro

‘Two of us will be in Montenegro next year.’

(72) *Da li ste bila vas dvojica ikad u Zagrebu?*

CONJ particle AUX<sub>2.PL</sub> be<sub>FEM.SG</sub> You<sub>GEN</sub> two<sub>COLL.F.SG</sub> ever in Zagreb

‘Have you two ever been to Zagreb?’

### **3.3.5. Case Assignment.**

#### 3.3.5.1. Structural Case Assignment

As mentioned before, structural case assignment is associated with functional heads  $T^\circ$  and  $v^\circ$  for [nom] and [acc] cases, respectively. Inherent case assignment is different from structural case assignment in that the former is closely related to  $\theta$ -roles, whereas the latter is not associated with it at all (Adger 2003; Chomsky 1995; Radford 2004).

As in other Slavic languages, BCS numeral phrases engender heterogeneous and homogeneous morphosyntax depending on whether in direct case positions or in oblique case positions. This variation depends on whether pre-valued abstract quantitative case is present on numerals: the presence of pre-valued abstract quantitative case results in heterogeneous morphosyntax, while the lack of the abstract case – homogeneous morphosyntax. This pre-valued abstract quantitative case is spelled out by syncretism with another case or directly spelled out by adding endings to numeral stems. All these feature-valuing processes occur via the operation Agree.

##### *3.3.5.1.1. Nominative Case vs. Quantitative Case*

As mentioned before, nominative case is valued by a functional projection  $T^\circ$  and the [nom] feature on  $T^\circ$  is deleted after it transfers [nom] feature to NP. Nominative case is of subjects and is responsible for subjective-predicate agreement. In other words, nominative case appears only in subject positions by the operation Agree between nominative case assigner  $T^\circ$  and NP, which receives nominative case value. Nominative case which appears in other case positions should not be nominative case. It should be

another case, which is syncretic, or homophonous to nominative case. Nominative case is the necessary condition to make NP subjects spell out as at PF and visible at LF.

Quantitative case is pre-valued abstract case of numerals. This abstract [case: quantitative] feature of numerals is copied onto nouns and modifiers and, in turn, is spelled out by morphological rules. Quantitative case makes it possible to adhere to the NP-hypothesis in that direct case assignment occurs as a result of spell-outs of pre-valued quantitative case, which is copied to numerals and nouns via Agree. The operation Agree is based on the fact that modifiers agree with head nouns. The abstract case approach presupposes that nouns serve as heads both in homogeneous morphosyntax and in heterogeneous morphosyntax. Furthermore, these abstract cases, i.e., paucal case and quantitative case, replace nominative/accusative case and genitive case depending on the contexts. These paucal and quantitative cases are not affected by case in case-required positions, because they are already spell-out forms of pre-valued abstract case, which is syncretic with another case. This property of the pre-valued quantitative cases makes it possible for them not to decline even in oblique case positions.

- (73) Voljelo se/voljeli su se                      dvoje                      mladih.  
 Loved<sub>NEUT.SG/MASC.PL</sub> (each other)    two<sub>COLL.NOM/QUANT</sub>    young (people)<sub>GEN.PL</sub>  
 ‘(The) two young people loved each other.’

Example (73) demonstrates that the collective numeral *dvoje* ‘2’ can be either the nominative case or the quantitative case, which is realized from pre-valued abstract quantitative case. Considering the mechanism of valuing nominative case between T° and NP, it is not impossible for quantitative case to replace nominative case in direct case positions. Nominative case on T° is valued onto a noun which has uninterpretable [case: ] feature and, at the same time, gives interpretable  $\phi$ -features, e.g., number and gender,

onto  $T^\circ$ . This process of feature-sharing is the basis of the operation Agree. Let us assume that the [nom] case from  $T^\circ$  is assigned onto the lexical stems of the collective numeral phrase {*dvoj-* *mlad-*} ‘two young (people)’. Once case is assigned by  $T^\circ$ , the lexical stems are ready to be spelled out. Pre-valued abstract quantitative case of the collective numeral {*dvoj-*} ‘2’ is spread to the substantive adjective lexical stem {*mlad-*} and the noun stem. Now the numeral and the noun have the case feature [case: quantitative], which will be spelled out by morphological rules. The [case: quantitative] of the collective numeral {*dvoj-*} can be spelled out by syncretism with the nominative case assigned by  $T^\circ$ . In this respect, the [nom] feature of  $T^\circ$  can be deleted and can be spelled out in a subject position as [case: quantitative] for the numeral and the [case: genitive] for the adjectival noun, respectively: [*dvoje*] and [*mladih*]. This process of derivations licenses spell-out forms of abstract quantitative case to have the same syntactic distribution as that of nominative case, because [nom] case feature of  $T^\circ$  is valued onto NP and the [nom] feature of  $T^\circ$  is deleted.

(74) *od dvoje mladih*            ‘from the two (mixed genders) young people’

As shown (74), BCS quantitative case of collective numerals can stand in all case-required positions, either in direct cases or in oblique cases. This accounts for the use of indeclinable collective numerals in oblique cases. However, collective numeral substantives, e.g., *dvojica* ‘2’, *trojica* ‘3’, *četvorica* ‘4’, etc., must decline according to required case, because they are nouns, which decline in case-required positions. As in (75), the collective substantive *dvojica* ‘2’ must decline in the genitive after the preposition *od* ‘from’ assigning genitive case to its complement. Their structure can be analyzed as in (76).

(75) Od dvojice mladih      ‘from the two (males only) young people’

(76)  $[_{PP} \emptyset [_{P'} [_{P} \text{od}]] [_{NP} \emptyset [_{N'} [_{N} \text{dvojica}]] [_{NP} \emptyset [_{N'} \emptyset [_{N} \text{mladih}_{GEN}]]]] ] ] ] ]$

The syntactic structure of collective numeral substantives differs from that of collective numerals in that collective numeral substantives merge on N° as heads, while collective numerals merge on the spec-of-NP as specifiers.

#### 3.3.5.1.2. Accusative Case

As mentioned in the previous section (3.3.5.1.1), spell-out forms of abstract quantitative case of numerals are syncretic with nominative case. Paucal forms spelled out from abstract quantitative case are also indeclinable. The transformation from abstract quantitative case to spell-out forms of quantitative case is a result of feature-based amalgamation: for instance, [case: quantitative] + [accusative]  $\rightarrow$  [quantitative] case, which is syncretic with accusative. [case: quantitative] + [nominative]  $\rightarrow$  [quantitative] case, which is syncretic with nominative case.

As mentioned before, accusative case marking occurs inside the domain of vP, which explains that the Animacy Rule applies only to NPs used as direct objects. The Animacy Rule in BCS applies only in the singular paradigm of masculine animate nouns belonging to masculine declension. For instance, the first example (77) is different from (78) and (79), because the Animacy Rule applies in (77), but not in (78) and (79). The cardinal numeral *jedan* ‘1’ in (77) is just a pure adjective that agrees with the following nouns in case, number, and gender. In contrast to (77), examples (78) and (79) exhibit a different result of the application of the Animacy Rule, because the numeral phrases *dva studenta* ‘two male students’, *petoro studenata* ‘five female students’ in direct object

positions prevent the Animacy Rule from applying to the quantified nouns, because the numerals have no [animacy] feature.

(77) Video    sam        samo    (jednog    novog)    studenta    (ACC=GEN)

saw<sub>M.SG</sub> AUX<sub>I.SG</sub> only (one<sub>GEN.SG</sub> new<sub>GEN.SG</sub>) student<sub>GEN.SG</sub>

‘I saw only one new student.’

(78) Video    sam        samo    dva        studenta.    (ACC ≠ GEN)

saw<sub>M.SG</sub> AUX<sub>I.SG</sub> only two<sub>QUANT</sub> student<sub>GEN.SG</sub>

‘I saw only two students.’ (non-specified gender)

(79) Video    sam        petoro        studenata.    (ACC ≠ GEN)

Saw<sub>M.SG</sub> AUX<sub>I.SG</sub> five<sub>COLL.QUANT</sub> students<sub>GEN.PL</sub>

‘I saw five students.’

To further the process of the application of the Animacy Rule, genitive-accusative forms are spelled out as a result of the interaction between [accusative] case feature and [animacy: +] feature of masculine nouns of masculine declension. That is, accusative case of masculine animate nouns is spelled out as genitive as a result of the interaction between [case: acc.] plus [animacy: +] of non-quantified animate nouns of masculine declension. The application of the Animacy Rule is inhibited by quantification. This does not imply that numerals are heads blocking the application of the Animacy Rule, because the Animacy Rule depends on the semantics of nouns and spell-out forms of quantified noun phrases are all the result of Agree between numerals and nouns.

### 3.3.5.2. Inherent Case Assignment

Inherent case assignment differs from structural case assignment in that inherent case is assigned by lexical items, e.g., N, Adj, V, P, not by functional categories, e.g., T° or v°. As in (80) below, BCS numerals do not decline in oblique cases.

- (80) *sa*                *dvoje*                *dece*  
      *with*<sub>INSTR</sub>    *two*<sub>COLL.QUANT</sub>    *children*<sub>GEN.PL</sub>  
      ‘with two children’

The preposition *s(a)* ‘with’ is an instrumental case-assigner. The [case: instrumental] feature of the preposition must be deleted by merging with the noun {*dec-*} ‘children’ with unvalued [case: ] feature. Inherent case assignment occurs under the circumstances that lexically assigned case is valued directly to nouns and, in turn, is spelled out by morphological rules. In the case of (80), the collective numeral phrase was supposed to be spelled out as the instrumental case. However, the numeral and the noun of the numeral phrase *dvoje dece* ‘two children’ in (80) are spelled as the quantitative and the genitive case, respectively, after the preposition *s(a)* ‘with’ requiring the instrumental case. This indeclinable numeral prepositional phrase occurs, because inherent case assignment is blocked by the abstract case, which appears only in direct cases. As mentioned before, inherent case assignment can occur only when the lack of abstract quantitative case licenses lexical case to be valued directly onto a head noun.



## Chapter Four: Polish Collective Numerals

### 1. INTRODUCTION

#### 1.1. Polish Numerals

Polish numerals are generally divided into three types: i) cardinal numerals, ii) ordinal numerals, and iii) collective numerals. Ordinal numerals decline as regular adjectives which have neither their own  $\phi$ -features nor case feature. The syntactic behavior of ordinal numerals in Polish is the same as in Russian and BCS. In contrast, cardinal numerals indicating the quantity of individual items have less complicated and more logical morphosyntactic properties than those of Russian. For instance, lower numerals indicating *dwa/dwe* '2', *trzy* '3', *cztery* '4' behave more like adjectives in that they do not require the quantified noun to take on the genitive case or singular number, whereas higher numerals (from 5 and above), e.g., *pięć* '5', *sześć* '6', *siedem* '7', *osiem* '8', *dziewięć* '9' and *dziesięć* '10', etc., behave more like nouns in a syntactic perspective. The cardinal numeral *jeden(m.)/jedna(f.)/jedno(n.)* '1' are declined as pure adjectives, which have the morphological paradigm of a possessive pronoun, i.e., *mój* 'my' (Feldstein 2001). The plural forms *jedne(non-vir.)/jedni(vir.)* also have the meaning of 'some, several' (Bielec 1998: 241-242).

Furthermore, collective numerals are derived from part of the Common Slavic (henceforth, CS) numeral system. Collective numerals, e.g., *dwoje* '2', *troje* '3', *czworo* '4', *pięcioro* '5', *sześcioro* '6', *siedmioro* '7', *ośmioro* '8', *dziewięcioro* '9' and *dziesięcioro* '10', etc., are utilized to emphasize the collectivity of things or quantify *pluralia tantum* (PT) nouns.

### 1.1.1. Cardinal Numerals

The major distinction between cardinal numerals and collective numerals is that cardinal numerals indicate that entities are to be construed individually, whereas collective numerals denote that entities are considered together as a unit (Corbett 2000: 119). A cardinal numeral indicating singularity *jeden* ‘1’ exhibits the same morpho-syntactic behavior that pure adjectives do in every respect. For this reason, no further analysis will be performed for *jeden* ‘1’.

- (1) a. *jeden*<sub>CARD</sub> *młody*<sub>MASC.NOM.SG</sub> *człowiek*<sub>M.NOM.SG</sub> ‘a (certain) young man’  
 b. *jedna*<sub>CARD</sub> *młoda*<sub>F.NOM.SG</sub> *kobieta*<sub>F.NOM.SG</sub> ‘a woman’  
 c. *jedno*<sub>CARD</sub> *młode*<sub>N.NOM.SG</sub> *dziecko*<sub>N.NOM.SG</sub> ‘a child’  
 d. *jedni*<sub>CARD</sub> *młodzi*<sub>VIR</sub> *ludzie*<sub>NOM.PL</sub> ‘some people’

#### 1.1.1.1. Lower Numerals vs. Higher Numerals

The loss of the CS dual number and the historical development had no effect on lower numerals (2, 3, 4) of Polish. With regard to internal agreement, so-called concord, Polish is different from Russian and BCS in that Polish lower numerals, e.g., *dwaj* (virile) / *dwa* (m.non-virile/n.) / *dwie* (f.) ‘2’, *trzej* (virile) / *trzy* (m.non-virile/f./n.) ‘3’, *czterej* (virile) / *cztery* (m.non-virile/ f./ n.) ‘4’, are combined with nouns in the nominative plural, while Russian and BCS lower numerals – with the genitive singular. In addition, Polish is distinguished by having virile forms of the numerals i.e., *dwaj* ‘2’ / *trzej* ‘3’ / *czterej* ‘4’, etc.<sup>61</sup>

<sup>61</sup> The Polish virility is expressed by the following two ways: i) *dwaj* + N(nom.pl) + verb (nom.pl.) or ii) *dwóch/dwu* + N(gen.pl) + verb (neut.sg., so-called *default*). (Bielec 1998: 242-244)

	<i>Grammatical agreement</i>	<i>Default (neut.sg.)</i>	
e.g.,	<i>Dwaj</i> panowie czekają	– <i>Dwóch/dwu</i> panów czeka.	‘Two men are waiting.’
	<i>Trzej</i> panowie czekają	– <i>Trzech</i> panów czeka.	‘Three men are waiting.’
	<i>Czterej</i> panowie czekają	– <i>Czterech</i> panów czeka.	‘Four men are waiting.’

- (2) Dwa/ trzy/ cztery<sub>NOM</sub> ołówki<sub>NOM.PL</sub> (m. non-virile) ‘two/three/four pencils’
- (3) Dwie/ trzy/ cztery<sub>NOM</sub> matki<sub>NOM.PL</sub> (f.) ‘two/three/four mothers’
- (4) Dwa/ trzy/ cztery<sub>NOM</sub> drzewa<sub>NOM.PL</sub> (n.) ‘two/three/four trees’
- (5) Dwaj/ trzech/ czterej<sub>NOM</sub> synowie<sub>NOM.PL</sub> (m. virile) ‘two/three/four sons’

Due to the legacy from the CS numeral system, higher cardinal numerals behave more like nouns than adjectives. Contrary to these lower numerals, higher numerals are used with complement nouns in the genitive plural and reveal the morphosyntactic difference between the direct and oblique cases. In other words, the direct cases *nominative/accusative* exhibit a heterogeneous pattern of case assignment, while the oblique cases – a homogeneous pattern of case assignment (Babby 1985b, 1986, 1987). In this respect Polish is no different than Russian.

Polish numerals differ from Russian numerals in that Polish numerals have virile forms referring to the [masculine personal] features. With regard to Subject-Predicate-Agreement (henceforth, SPA), Polish quantificational phrases with higher numerals trigger singular agreement, or the neuter singular form in the past tense. Semantic agreement, in general, does not occur in Polish numeral phrases (Suprun 1963).<sup>62</sup> For example:

- (6) Pięć kobiet opowiada historię swego życia.  
five<sub>NOM</sub> woman<sub>GEN.PL</sub> tell<sub>PRES.3.SG</sub> story<sub>ACC.PL</sub> (one's)own<sub>GEN.SG</sub> life<sub>GEN.SG</sub>  
‘Five women tell stories of their life.’

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<sup>62</sup> Franks (1995: 210) states that only two Polish examples with plural agreement (out of a written corpus of 650) were found by Suprun (1963, 140-141). Suprun regards the semantic agreement in Polish as a case resulting only in unusual circumstances, e.g., the long distance between the subject and the predicate of sentences. (cf. Suprun, Adam. 1963. Zametki po sintaksisu pol'skix čislitel'nyx. *Pytannja slov'jansk'oho movoznavstva* 7-8:135-145. )

- (7) Pięć kobiet stworzyło film animowany .  
 five<sub>NOM</sub> woman<sub>GEN.PL</sub> made<sub>PAST.NEUT.SG</sub> film<sub>M.ACC.SG</sub> animated<sub>M.ACC.SG</sub>  
 ‘Five women made an animation film.’

As observed in (6) and (7), Polish higher cardinal numerals reveal the neuter singular form of the predicate. The 3<sup>rd</sup> person singular form is used for present tense, while the neuter singular form is used for past tense as the default form caused by the lack of  $\phi$ -features in numeral head Q.

### 1.1.2. Ordinal Numerals

Ordinal numerals, e.g., *pierwszy(m.)/pierwsza(f.)/pierwsze(n.)* ‘first’, *drugi(m.)/druga(f.)/drugie(n.)* ‘second’, *trzeci(m.)/trzecia(f.)/trzecie(n.)* ‘third’, *czwarty* ‘fourth’, *piąty* ‘fifth’, *szósty* ‘sixth’, *siódmy* ‘seventh’, *ósmo* ‘eighth’, *dziewiąty* ‘ninth’, *dziesiąty* ‘tenth’, etc., behave as normal adjectives in all aspects. They agree with the nouns which they modify in case and  $\phi$ -features as in (8). Like adjectives, ordinal numerals also have a special form to express virility as shown below in (9).

- (8) a. pierwszy<sub>MASC</sub> koncert ‘the first concert’  
 b. pierwsza<sub>FEM</sub> miłość ‘the first love’  
 c. pierwsze<sub>NEUT</sub> spotkanie Baracka Obamy i Dmitrija Miedwiediewa  
 ‘The first meeting for Barack Obama and Dmitrij Miedwiediew’
- (9) Pierwsi<sub>VIRILE</sub> Polacy<sub>VIRILE</sub> w Teksasie ‘The first Poles in Texas’

### 1.1.3. Collective Numerals

Polish collective numerals are similar to Russian and BCS collective numerals in their usage. They perform the following major functions: i) the mixed gender specification of a group, ii) children, and infants/young animals whose nominative plural ends in *-ęta*, and iii) PT nouns, e.g., *drzwi* ‘a door’, *skrzypce* ‘a violin’, and *nożnice* ‘scissors’, etc.

To express collective meaning, Polish used to utilize the old forms, i.e., *dwój(m.)*/*dwoja(f.)*/*dwoje(n.)* and *trój(m.)*/*troja(f.)*/*troje(n.)*, etc., which agreed with the nouns which they modify. It was not until the beginning of the 15th century that agreeing collective numerals died out and were superseded by the neuter forms of the numerals i.e., *dwoje* ‘2’, *troje* ‘3’, *czworo* ‘4’, and *pięcioro* ‘5’, etc., in contemporary Polish (Klemensiewicz 1955; Szober 1963).

With regard to the declensional forms of collective numerals, the suffix *-g* appears in the oblique cases (Długosz-Kurczabowa and Dubisz 2006; Klemensiewicz 1955; Sussex and Cubberley 2006; Szober 1963); e.g., *z dwojga stron* (gen.) ‘from the two sides’, *dwojgu dzieciom* (dat.) ‘to two children’, *w dwojgu szkołach* (prep.) ‘in (the) two schools’, and *z dwojgiem bliźniąt* (instr.) ‘with two twins’. The declension paradigm is represented by (10) below.

(10) Declensional Paradigm of Polish Collective Numerals

	Numeral				Noun
	2	3	4	5	
Nom.	dwoje	troje	czworo	pięcioro	dzieci (gen.pl.)
Gen.	dwojga	trojga	czworga	pięciorga	dzieci (gen.pl.)
Dat.	dwojgu	trojgu	czworgu	pięciorgu	dzieciom (dat.pl.)
Acc.	dwoje	troje	czworo	pięcioro	dzieci (gen.pl.)
Instr.	dwojgiem	trojgiem	czworgiem	pięciorgiem	dzieci (gen.pl.)
Prep.	dwojgu	trojgu	czworgu	pięciorgu	dzieciach (prep.pl.)

Unlike Russian where the use of collective numerals is restricted to number values from 2 to 10, Polish, like BCS, allows its collective numerals to be formed from 2 to 99. To make collective numerals from 11 to 19, 20, 30 and 40, discard everything after the *-ś-* in the cardinal number and then add *-cioro*. For example, *dwanaście*<sub>CARD</sub> ‘12’ becomes *dwanaścioro*<sub>COLL</sub> and *trzydzieści* ‘30’ – *trzydzieścioro*, etc. To form numbers from 50 to 90, add *-ęcioro* after removing the ending *-ąt*. For example, cardinal number *pięćdziesiąt* ‘50’ becomes collective number *pięćdziesięcioro* ‘50’ and *dziewięćdziesiąt* ‘90’ – *dziewięćdziesięcioro* ‘90,’ etc. (Bielec 1998). In this respect, collective numerals can be used with the numeral *jeden(m.)/jedna(f.)/jedno(n.)* ‘1’. For instance, the collective numeral phrase 21 consists of *dwadzieścioro*<sub>COLL</sub> ‘20’ and *jeden*<sub>CARD</sub> ‘1’, i.e., *dwadzieścioro jeden dzieci* ‘21 children’. 22 is *dwadzieścioro dwoje*, 24 – *dwadzieścioro czworo*, and 35 – *trzydzieścioro pięcioro*, etc.

## 1.2. The Definition of Polish Plurals

Accounting for the four-fold scheme of Slavic plurals, Stankiewicz (1986: 156) claims that ‘Polish lacks a counted plural and makes limited use of the collective and counted collective plural.’ In the case of the examples of Russian and BCS, counted plural forms are revealed when they are used with lower numerals, which originally resulted from the loss of CS duals. For instance, *dva doma* (m.) ‘two houses’, *tri mašiny* (f.) ‘three cars’, and *četyre jabloka* (n.) ‘four apples’, etc., in Russian, and *dva čoveka* (m.) ‘two persons’, *tri studentice* (f.) ‘three (female) students’ and *četiri kola* (n.) ‘four cars’, etc., in BCS.

(11) The Four-Fold Scheme of Polish Plurals

Polish	Simple Plural		Counted Plural
	Chłopcy	‘boys, lads’	-----
	Wujowie	‘uncles’	
	Panowie	‘men’	
	(kochani) wujostwo Państwo		Trzech chłopców (poszło) Oboje wujostwo
	Collective Plural		Counted Collective Plural

(Polish data excerpted from Stankiewicz 1986:155)

Polish, however, exhibits different morphosyntactic properties of plurals from in the plural in Russian and BCS in that Polish lower numerals are required to be used with simple plural nouns in the nominative case instead of counted plural nouns.

(12) Moje dwie siostry są zupełnie inne niż ja.

my<sub>PL</sub> two<sub>F.NOM</sub> sisters<sub>NOM.PL</sub> are<sub>3.PL</sub> completely different from I

‘My two sisters are completely different from me.’

(13) Dwaj mali chłopcy stoją przed kościołem.

two<sub>VIR.NOM</sub> little<sub>VIR.NOM.PL</sub> boys<sub>NOM.PL</sub> stand<sub>3.PL</sub> in front of church<sub>INSTR.M.SG</sub>

‘Two little boys are standing in front of the church.’

As shown above in (12) and (13), counted plural forms are superseded by simple plural forms in Polish. In addition, virile forms in (13) i.e., *dwaj* ‘2’ and *mali* (<*mały* ‘young, little’) denoting male human beings modify the head noun *chłopcy* ‘boys’.

### 1.3. The Formation and Diachronic Development of Collective Numerals

Collective numerals are formed from cardinal numerals. Polish shares collective numeral suffixes *-oj(e)* and *-or(o)/-er(o)* with Russian and BCS. The suffix *-oj(e)* is used for '2' and '3' and the other suffix *-or(o)/-er(o)* – for '4' and higher (Sussex and Cubberley 2006: 445). Polish collective numerals, i.e., *dwoje* '2', *troje* '3', *czworo* '4' and *pięcioro* '5', etc., originated from old forms of agreeing numerals: e.g., *dwój*, *dwoja*, *dwoje* '2'; *trój*, *troja*, *troje* '3'; *czwór*, *czwor*, *czworo* '4'...etc. From these old forms of the agreeing collective numerals, only neuter singular forms survive in contemporary Polish. They are found only in the nominative and accusative cases (De Bray 1980; Długosz-Kurczabowa and Dubisz 2006; Stankiewicz 1986; Szober 1963).

Furthermore, the oblique case forms of collective numerals are shown as follows: gen. *dwojga*, *trojga*, *czworga*/ dat. *dwojgu*, *trojgu*, *czworgu*/ instr. *dwojgiem*, *trojgiem*, *czworgiem*/ prep. *dwojgu*, *trojgu*, *czworgu*, etc. (Bielec 1998: 248). The origin of the thematic consonant *-g-* is still not clear. It may be related to the suffix *\*-gъ/-ga/-go* for masculine, feminine, and neuter, respectively, as noun endings (Szober 1963: 236). Collective numerals in Polish used to be nouns originally. The declension paradigm of collective numerals shown in (10) is the result of the contamination between pronominal and nominal paradigms (Długosz-Kurczabowa and Dubisz 2006).

## 2. THE GENERAL USE OF POLISH COLLECTIVE NUMERALS

Polish collective numerals are used to express i) the collectivity of entities as a whole, ii) the mixed gender specification of a group, iii) the quantification of PT nouns or nouns of paired objects, and iv) young animals in *-ę* etc. The selection and use of collective numerals, in Polish, are determined by nouns as in Russian and BCS.



## 2.1. Animate Nouns

### 2.1.1. Masculine Nouns and Dual-Gender Nouns (*rzeczowniki dwurodzajowe*) in *-a*

When they need to be quantified by cardinal numerals, Polish nouns denoting ‘male human beings’ are usually used with their virile forms as in (14) below. With virile forms of cardinal numerals, masculine nouns indicate that all the members of a group are male. In general, the use of collective numerals denotes a mixed gender group of male(s) and female(s). When, however, used with nouns denoting only masculine persons, collective numerals cannot be used. For example, words like the noun *mężczyzna* ‘a man’, which lexically denote only males, cannot take collective numerals as in (15). Virile forms of cardinal numerals are preferred for masculine nouns in *-a* because of the virility marking. To designate a group of females only, cardinal numerals are used as in (16).

(14) Dwaj turyści zostali odnalezieni

Two<sub>CARD.VIRILE</sub> tourists<sub>NOM.PL</sub> became<sub>VIRILE.PL</sub> found<sub>VIRILE.PL</sub>

po stronie słowackiej, jeden po polskiej.<sup>63</sup>

in side<sub>PREP</sub> Slovakian<sub>ADJ.PREP</sub> one<sub>CARD.M</sub> in Polish<sub>ADJ.PREP</sub>

‘Two (male) tourists were found in the side of Slovak, one – in the side of Poland.’

(15) \*dwoje mężczyzn szuka pracy.<sup>64</sup>

two<sub>COLL</sub> men<sub>GEN.PL</sub> look for<sub>3.SG</sub> work<sub>GEN.SG</sub>

‘Two men are looking for a job.’

(16) Dwie lekarki: pani D. Kozłowska i pani D. Moskała,

<sup>63</sup> <http://wiadomosci.wp.pl/kat,1342,title,Zwloki-mezczyzny-znaleziono-na-szczycie-w-Beskidach,wid,10896134,wiadomosc.html?ticaid=17d0a>

<sup>64</sup> Google search. <<http://www.google.com>>

Two<sub>CARD</sub> doctors<sub>F.NOM.PL</sub> D. Kozłowska and D. Moskała,  
 czuwały nie tylko nad zdrowiem dzieci, ale ...<sup>65</sup>  
 watched<sub>NON-VIRILE.3.PL</sub> not only over children's health<sub>INSTR</sub>, but also....  
 'The two (female) doctors: MD. Kozłowska and MD. Moskała, watched not only  
 over children's health, but also...'

As shown (15) above, the masculine noun *mężczyzna* 'a man' cannot be used with collective numerals, which indicate mixed gender specification. The noun *mężczyzna* 'a man' presupposes that the members of a group are all males, so that the noun cannot designate a group of mixed gender. In this respect, example (15) is ungrammatical. Instead, the noun *mężczyzna* 'a man' can combine with virile cardinal numerals, e.g., *dwaj mężczyźni* 'two men' or *pięciu mężczyzn* 'five men'. Example (17) emphasizes the individuated meaning of entities in the group.

(17) Dwaj mężczyźni zostali zatrzymani  
 two<sub>CARD.VIR.NOM.PL</sub> man<sub>VIR.NOM.PL</sub> became<sub>3.PL</sub> arrested<sub>VIR.NOM.PL</sub>  
 z narkotykami...<sup>66</sup>  
 with narcotics<sub>INSTR.PL</sub>  
 'Two men became under arrest with narcotics.'

Masculine nouns in *-a* are different from dual-gender nouns (*rzeczowniki dwurodzajowe*). Dual-gender nouns are those which have variable gender selectively determined by the sex of a referent in the real world. In contrast, masculine nouns ending in *-a* have their gender value, i.e., [masculine] even before a referent is designated. The desinence *-a* of these masculine nouns does not function as a gender marker. In this

<sup>65</sup> <http://www.tchr.org/australia/historia/1978pl.htm>

<sup>66</sup> Google search. <<http://www.google.com>>

instance, the morphological desinence *-a* specifies DC of the nouns, i.e., DC II. For instance, *kolega* ‘a colleague’, *kierowca* ‘a driver, chauffeur’, *dentysta* ‘a dentist’, *mężczyzna* ‘a man’, *wydawca* ‘a publisher’, *poeta* ‘a poet’, *tata* ‘a daddy’, *obrońca* ‘guardian’, and *kaleka* ‘a cripple’, etc., are all masculine nouns, which belong to DC II. These nouns have their special declension paradigm, which is called ‘mixed declension’ (Bielec 1998: 85; Szober 1963: 205-7).<sup>67</sup> Among these nouns above, *kaleka* ‘a cripple’ can be used as a dual-gender noun, whose grammatical gender is stipulated by natural sex of a referent. The following nouns belong to a group of dual-gender nouns: *bzdura* ‘rubbish’, *gadula* ‘chatter-box’, *gamuła* ‘oaf, slouch’, *gawęda* ‘chat, gossip’, *niecnota* ‘scoundrel’, *niedolega* ‘oaf, lout’, *niemowa* ‘mute’, *niezdara* ‘slouch’, *papla* ‘babbler, prattler’, *parepa* (podły mały koń) ‘(literally) a mean little horse’, *plotka* ‘gossip’, *sierota* ‘orphan’, *sluga* ‘servant’, *szkapa* ‘(old) nag’, etc. These dual-gender nouns can be modified by either masculine or feminine forms of adjectives depending on the sex of referents (Muczkowski 1836: 26).

- (18) Mój kolega mówi, że mnie lubi... ale ja go nienawidzę,  
 my<sub>M.NOM</sub> friend<sub>M.NOM.SG</sub> said<sub>3.SG</sub> that me<sub>ACC</sub> love<sub>3.SG</sub> but I him hate<sub>I.SG</sub>,  
 co mam zrobić?<sup>68</sup>  
 what have to<sub>I.SG</sub> do<sub>INF</sub>  
 ‘My (male) friend said that (he) loves me...but I hate him, what should I do?’

- (19) Moja koleżanka powiedziała że mnie kocha.<sup>69</sup>

<sup>67</sup> Masculine nouns ending in *-a* or *-o* decline as feminine in the singular, while as masculine in the plural. This is called ‘the mixed declension’. (Bielec 1998: 85; Szober 1963: 205-7)

<sup>68</sup> [http://www.pozzkole.pl/porada.por.Moj\\_kolega\\_mowi\\_ze\\_mnie\\_lubiale\\_ja\\_go\\_nie\\_nawidzeCo\\_mam\\_zrobic.12546.0.0.html](http://www.pozzkole.pl/porada.por.Moj_kolega_mowi_ze_mnie_lubiale_ja_go_nie_nawidzeCo_mam_zrobic.12546.0.0.html)

<sup>69</sup> [http://poszkole.pl/porada.por.Moja\\_kolezanka\\_powiedziala\\_ze\\_mnie\\_kocha\\_.91886.0.0.html](http://poszkole.pl/porada.por.Moja_kolezanka_powiedziala_ze_mnie_kocha_.91886.0.0.html)

my<sub>F.NOM</sub> friend<sub>F.NOM.SG</sub> said<sub>3.SG</sub> that me<sub>ACC</sub> love<sub>3.SG</sub>

‘My (female) friend said that she loves me.’

As shown in (18) and (19), the masculine noun *kolega* ‘friend’ in (18) is modified by the masculine possessive pronoun *mój* ‘my’, while the feminine noun *koleżanka* ‘a female friend’ is modified by the feminine form *moja* ‘my’ in (19). These masculine nouns ending in *–a* is used with virile cardinal numerals as in (14).

Dual-gender nouns can be modified by either masculine or feminine modifiers depending on natural sex of a referent. That is, gender value of dual-gender nouns is not specified until a referent is selected by a speaker. Masculine nouns ending in *–a* are assigned the [gender: masculine] value by their semantic information. The morphosemantic mismatch, i.e., mismatch between [declension class] and [gender] features.

(20) Na skraju tatrzańskiej wsi mieszka dwoje sierot:

on edge Tatrzań village live<sub>3.SG</sub> two<sub>COLL</sub> orphans<sub>GEN.PL</sub>

Zośka (Lina Karin) i jej brat Władek (Józef Bukowski).<sup>70</sup>

Zośka (Lina Karin) and her brother Władek (Józef Bukowski)

‘On the edge of Tatrzań village live two orphans.’

(21) ...niedawno zaadoptowała dwie sieroty...<sup>71</sup>

...recently adopted two<sub>CARD.F</sub> orphans<sub>F.NOM.PL...</sub>

‘...recently (she) has adopted two orphans...’

<sup>70</sup> [http://narty.z-ne.pl/s.doc.pol.narty.26088,1,1722,trzy\\_pokolenia\\_skoczkow\\_narciarskich\\_z\\_rodziny\\_gasienicow-sieczkow.html](http://narty.z-ne.pl/s.doc.pol.narty.26088,1,1722,trzy_pokolenia_skoczkow_narciarskich_z_rodziny_gasienicow-sieczkow.html)

<sup>71</sup> [http://zielona.org/Opowiesc\\_o\\_dwoch\\_terapeutycznych\\_ekowioskach](http://zielona.org/Opowiesc_o_dwoch_terapeutycznych_ekowioskach)

As shown in (20), collective numerals are generally used with dual-gender nouns to denote a group of mixed gender. The virile forms of lower cardinal numerals, i.e., *dwaj* ‘2’, *trzej* ‘3’, *czterej* ‘4’, etc., indicate a homogeneous group of males. However, feminine forms of lower cardinal numerals are used to indicate a group of females only as in (21).

### 2.1.2. Substantivised Adjectives (Adjectival Nouns)

Substantivised adjectives are known as adjectival nouns, which have morphologically adjectival endings and function as nouns, for instance, *oskarżony* ‘an accused’, *podejrzany* ‘a suspect’, *znajomy* ‘an acquaintance’, etc. These adjectival properties of substantivised adjectives facilitate the chance of the use of collective numerals. The use of collective numerals in Polish emphasizes the mixed gender composition of the group, when collective numerals are used with adjectival nouns. The primary function of collective numerals in Polish is to indicate mixed gender specification, whereas the secondary function is to intensify the meaning of collectivity of entities. Virile forms, e.g., *dwaj* ‘2’, *trzej* ‘3’, *czterej* ‘4’, *pięciu* ‘5’ etc., enable the numeral phrases to designate a group of males. As shown in (22), the virile cardinal numeral *dwaj*<sub>VIR</sub> ‘two’ indicates a virile group. Non-virile forms of cardinal numerals are utilized for a group of females as in (23) below.

- (22) *Moi dwaj znajomi wrócili*  
*My<sub>VIRILE.PL</sub> two<sub>VIRILE.NOM.PL</sub> acquaintances<sub>VIRILE</sub> returned<sub>VIRILE.3.PL</sub>*  
*z Chicago a jeden ze Szkocji.*<sup>72</sup>  
*from Chicago and one<sub>NOM.SG</sub> from Scotland<sub>GEN</sub>*

<sup>72</sup> <http://wiadomosci.onet.pl/1,15,11,54653950,146613908,6280604,0,28350,forumeu.html>

- (23) Dwie znajome rozmawiają o pani Ziucie<sup>73</sup>  
 two<sub>CARD</sub> acquaintances<sub>NOM.PL</sub> talk<sub>3.PL</sub> about Ms. Ziuta  
 ‘Two acquaintances are talking about Ms. Ziuta.’

When used with substantivized adjectives, collective numerals designate mixed gender specification rather than the collectivity of a group. In (24) below, the collective numeral phrase *dwoje znajomych* ‘two acquaintances (male plus female)’ shows that the group consist of the members of mixed gender. The relative pronoun *którzy*<sub>VIR.NOM.PL</sub> ‘they’ betokens the possibility that there is, at least, one male person in the group. To indicate the virility of a group, virile forms must be used: for example, *dwaj znajomi, którzy...* ‘two acquaintances, who...’ To specify a group of female members, non-virile cardinal numerals are used, e.g., *dwie znajome, tri znajome, cztery znajome, pięć znajomych*, etc., with a non-virile relative pronoun *które* as in (25).

- (24) Mam dwoje znajomych, którzy mają urodziny  
 I have two<sub>COLL</sub> acquaintances<sub>GEN.PL</sub>, who<sub>VIRILE.NOM.PL</sub> have<sub>3.PL</sub> birthdays  
 tydzień przede mną i tydzień po mnie.<sup>74</sup>  
 a week<sub>ACC</sub> before mine<sub>INSTR</sub> and a week<sub>ACC</sub> after mine<sub>PREP</sub>  
 ‘I have two acquaintances that have birthdays a week before and after me.’

- (25) Z kolei jego dwie znajome, które dzisiaj  
 in turn, his two<sub>CARD.NON-VIR</sub> acquaintances<sub>NOM.PL</sub>, who<sub>NOM.PL</sub> today  
 są przesłuchiwane, mogą odpowiadać za podżeganie  
 are interrogated, can respond for incitement  
 do popełnienia przestępstwa.<sup>75</sup>

<sup>73</sup> <http://bodot.fm.interia.pl/sasiad.htm>

<sup>74</sup> <http://houston.blox.pl/2007/06/Impreza-urodzinowa.html>

to perpetration (of) crime

‘In turn, his two acquaintances, who are interrogated today, can respond for the incitement to perpetration of the crime.’

### 2.1.3. Generic nouns: *ludzie* and *dzieci*

Nouns such as *dzieci* ‘children’ or *ludzie* ‘people’ are commonly used with collective numerals, because these nouns are used as generic nouns which cover a mixed gender group, i.e., the noun *dzieci* ‘children’ encompasses *chłopiec* ‘a boy’ plus *dziewczyna* ‘a girl’. Moreover, the noun *ludzie* ‘people’ embraces *mężczyzna* ‘a man’ plus *kobieta* ‘a woman’, etc. Yet these nouns, i.e., *ludzie* ‘people’ and *dzieci* ‘children’ do not preclude the possibility of the use with virile cardinal numerals as in (26) and (27). As shown in (26) and (27), the numeral phrases \**dwie ludzie* ‘two people’ and \**dwa dzieci* ‘two children’ are both not grammatical. This ungrammaticality results from the gender of the numerals, which do not agree with nouns (Przepiórkowski 2003).

(26) Dwaj / \*dwie ludzie z szafą<sup>76</sup>  
two<sub>CARD.VIR</sub> / two<sub>CARD.NON-VIR</sub> people<sub>NOM.PL</sub> with wardrobe  
‘Two people with a wardrobe’

(27) Dwaj / \*dwa dzieci w USA zaraziło się  
two<sub>CARD.VIR</sub> / two<sub>CARD.NON-VIR</sub> children in USA (were) infected REF  
nowym rodzajem grypy.<sup>77</sup>  
(by) new type of influenza

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<sup>75</sup> [http://www.policja.pl/portal/pol/1/26664/Odpowie\\_za\\_szczucie\\_psem.html](http://www.policja.pl/portal/pol/1/26664/Odpowie_za_szczucie_psem.html)

<sup>76</sup> [http://film.onet.pl/14244,,Dwaj\\_ludzie\\_z\\_szaf%C4%85,film.html](http://film.onet.pl/14244,,Dwaj_ludzie_z_szaf%C4%85,film.html)

<sup>77</sup> <http://www.maaterace.pl/dwaj-dzieci-w-usa-zarazilo-sie-nowym-rodzajem-grypy.66543.html>

‘Two children in USA were infected by the new type of influenza.

As shown in (26) and (27), the female form of lower cardinal numerals cannot be used with these generic nouns, e.g., *ludzie* ‘people’ and *dzieci* ‘children’. The numeral phrases \**dwie ludzie/dzieci* and \**dwa dzieci* are ungrammatical. These generic nouns *ludzie* ‘people’ and *dzieci* ‘children’ are, in principle, quantified by collective numerals or virile cardinal numerals: e.g., *dwoje ludzi/dzieci*, *dwaj ludzie/dzieci*, and *pięciu ludzi/dzieci*. However, the cardinal numeral phrase ?*dwa ludzie* ‘two people’ can be observed as in (28).

- (28) ...i      dwa      ludzie      go      musiły      zajeżdżać do szpitala.<sup>78</sup>  
...and two<sub>CARD</sub>   people<sub>NOM.PL</sub> him   had to   take   to hospital  
‘...and two people had to take him to the hospital.’

#### 2.1.4. Personal Pronouns

Plural forms of personal pronouns, i.e., *my* ‘we’, *wy* ‘you (pl./polite)’, and *oni* (virile)/*one* (non-virile), can be quantified by collective numerals when they need to mark mixed gender. Whenever used with collective numerals, the personal pronouns must be in the genitive case, e.g., *nas* ‘we<sub>GEN</sub>’, *was* ‘you<sub>GEN</sub>’, *ich* ‘they<sub>GEN</sub>’. Furthermore, both collective and cardinal numerals, whether virile or non-virile, can quantify personal pronouns. Cardinal numerals cannot specify the mixed gender of a group. Virile forms of cardinal numerals indicate that a group is not of mixed gender, but is composed of males only, while non-virile forms exclude the possibility that at least one man is present in a group. Example (29) implies that the collective numeral phrase with the pronoun *nas*

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<sup>78</sup> <http://gu.us.edu.pl/index.php?op=artykul&rok=2000&miesiac=3&id=335&type=no>



‘we<sub>GEN</sub>’ consists of two people: one is a man and the other is a woman, because the collective numeral *dwoje* is used. In contrast to (29), example (30) specifies that the group quantified by cardinal numerals consists of female members only.

(29) Było nas dwoje.

were<sub>NEUT.SG</sub> we<sub>GEN</sub> two<sub>COLL</sub>

‘We were two.’

(30) Było nas dwie w domu.<sup>79</sup>

were<sub>NEUT.SG</sub> we<sub>GEN</sub> two<sub>CARD.F</sub> at home<sub>PREP</sub>

‘We were two (women) at home.’

Examples (31) and (32) below are related to virile forms of cardinal numerals. The virile cardinal numerals *dwaj* in (32) and *dwóch* in (31) exhibit syntactic distinction in agreement. With regard to virile forms, it is observed in contemporary Polish that there are two alternative ways of treating lower virile numerals: one way is to use an impersonal sentence where there is no grammatical subject in the nominative case. The other way is to use a personal sentence where there is a grammatical subject in the nominative case. (Bielec 1998; Długosz-Kurczabowa and Dubisz 2006; Feldstein 2001; Klemensiewicz 1955; Szober 1963). The impersonal sentence (31) illustrates that the form *dwóch* ‘2’ is not in the nominative case and its predicate is in the neuter singular, or the default form. On the contrary, the nominative virile form *dwaj* ‘2’ constructs the personal sentence (32) and is less common and less colloquial than the impersonal sentence illustrated in (31). As lower virile numerals agree with nouns in the nominative

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<sup>79</sup> <http://adonai.pl/kultura/drukuj.php?id=9>

plural in Polish, so the lower virile numeral *dwaj* ‘2’ agrees with the personal pronoun *my* ‘we’ in the nominative case as in (32) below.

- (31) Było            nas        dwóch            ze        stolicy.  
          were<sub>NEUT.SG</sub> we<sub>GEN</sub>   two<sub>COLL.VIRILE</sub>   from capital<sub>GEN.SG</sub>  
          ‘We were two (men) from the capital.’

- (32) My bili            dwaj.  
          We are<sub>VIRILE.PL</sub> two<sub>CARD.VIRILE</sub>  
          ‘We were two (men).’

#### 2.1.5. Nouns in –ę indicating young animate beings

In contrast to the common use of masculine nouns, feminine and neuter nouns are more likely to be utilized with cardinal numerals and mostly excluded from the combination with collective numerals like in Russian and BCS. However, some neuter nouns in –ę indicating young animate beings can be used with collective numerals as well as cardinal numerals.

As in the examples (33)-(36), the feminine noun *kobieta* ‘a woman, a lady’ is used with the cardinal numeral *dwie* ‘2’ to satisfy the requirement of internal agreement as in (33). When used with lower cardinal numerals (2, 3, and 4), nouns are in the nominative plural, whereas when used with higher numerals (more than 4), nouns must be in the genitive plural as in (36). As shown in (34), the feminine noun *kobieta* ‘a woman’ cannot be combined with the virile numeral *dwaj* ‘2’, because disagreement in gender causes ungrammaticality. Moreover, the use of collective numerals is inhibited from being used with feminine nouns as shown in (35).

- (33) Dwie<sub>CARD-F.LOWER</sub> kobiety<sub>F.NOM.PL</sub> 'Two women'  
 (34) \*Dwaj<sub>CARD.VIRILE.LOWER</sub> kobiety<sub>F.NOM.PL</sub> 'Two women'  
 (35) \*Dwoje<sub>COLL</sub> kobiet<sub>GEN.PL</sub> 'Two women'  
 (36) Pięć<sub>CARD</sub> kobiet<sub>GEN.PL</sub> 'Five women'

Collective numerals can, however, be used with neuter nouns in *-ę* indicating young animate beings, e.g., *niemowlę* 'an infant', *dziewczę* 'a girl', *szczenię* 'a puppy', *kurczę* 'a chicken', *kocię* 'a kitten', *zwierzę* 'a beast, animal', etc. These neuter singular nouns have desinence *-ęta* for the nominative plural: for instance, *szczenię* 'a puppy' > *szczenięta*, *kurczę* 'a chicken' > *kurczęta* 'chickens', *jagnię* 'a lamb' > *jagnięta* 'lambs', *prosię* 'a piglet' > *prosięta* 'piglets', *kocię* 'a kitten' > *kocięta* 'cats', *żrebię* 'a foal' > *żrebięta* 'foals', *cielę* 'a calf' > *cielęta* 'calves', and *zwierzę* 'a beast, animal' > *zwierzęta* 'animals', etc. These neuter nouns can be quantified by cardinal numerals instead of collective numerals: for example, the cardinal numeral phrase *trzy zwierzęta* 'three animals' is a semantically indistinguishable alternative to the collective numeral phrase like *troje zwierząt* 'three animals' (Małecki 1879: 242-43).

- (37) Dwoje      szczeniąt      bawi się      na podwórku.  
 two<sub>COLL</sub>    puppies<sub>GEN.PL</sub>    play<sub>3.SG</sub>    (around) in backyard<sub>PREP</sub>  
 'Two puppies play in the backyard.'  
 (38) Troje      kociąt      przyszło    na    świat      we wrześniu<sup>80</sup>.  
 three<sub>COLL</sub>    kittens<sub>GEN.PL</sub>    came<sub>PAST</sub>    into    the world    in    September  
 'Three kittens came into the world in September.'
- (39) Kupiłem    pięcioro      kurcząt.

<sup>80</sup> [http://new-arch.rp.pl/artykul/655246\\_Pierwszy\\_klonowany\\_kot\\_ma\\_potomstwo.html](http://new-arch.rp.pl/artykul/655246_Pierwszy_klonowany_kot_ma_potomstwo.html)

(I) bought five<sub>COLL.ACC</sub> chickens<sub>GEN.SG</sub>

‘I bought five chickens.’

As a neuter noun ending in *-ę*, the noun *dziewczę* ‘a girl’ has a morphological ending *-ę* and a feminine lexical meaning. That is, the grammatical ending mismatches the lexical meaning. The noun *dziewczę* ‘a woman’ must be modified by the demonstrative pronoun *to*, because the noun *dziewczę* is a neuter form as in *to kocię* ‘this kitten’, *to kurczę* ‘this chicken’, *to zwierzę* ‘this animal’, and *to niemowlę* ‘this infant,’ etc. The use of collective numerals is the best way to avoid the morphosemantic mismatch of these lexical items as shown in (40). The examples of (41) and (42) demonstrate the importance of agreement in gender. In (41) the feminine cardinal numeral form *dwie* ‘2’ cannot be used with the neuter form in the genitive plural *dziewcząt* ‘a girl’. Furthermore, the virile form in the genitive *dwóch* ‘2’ is not combined with the non-virile noun *kobieta* ‘a woman’. The feminine form, however, *dziewczyna* ‘a girl’ is used with the feminine form of the cardinal numeral *dwie<sub>F</sub>* ‘2’ as in (43), because the noun has feminine gender and overt morphological marking.

(40) √Dwoje dziewcząt wybrało życie zakonne – podkreślał duchowny.

two<sub>COLL</sub> girl<sub>N.GEN.PL</sub> chose<sub>NEUT.SG</sub> life religious – asserted<sub>M.SG</sub> clergyman<sub>M.NOM.SG</sub>

‘Three girls chose religious life – asserted the clergy.’

(41) \*Dwie /√dwa dziewczęta wybrało życie zakonne...

two<sub>CARD-F</sub> / two<sub>CARD,NEUT</sub> girls<sub>NOM.PL,NEUT</sub> chose<sub>NEUT.SG</sub> life religious...

‘Three girls chose religious life...’

(42) \*Dwóch dziewcząt wybrało życie zakonne...

two<sub>CARD.GEN,M</sub> girls<sub>GEN.PL,NEUT</sub> chose<sub>NEUT.SG</sub> life religious...

‘Three girls chose religious life...’

- (43) √Dwie dziewczyny wybrały życie zakonne...  
two *CARD.F.NOM* girls *F.NOM.PL* chose *NON-VIRILE.PL* life religious...  
‘Three girls chose religious life...’

The use of collective numerals is preferable with the noun *niemowlę* ‘an infant’, because collective numerals focus on the fact that noun designates young human beings, rather than on the gender, which is socially less important. That is, the gender specification of the noun is not the major issue focused on. For example:

- (44) Od kiedy moje niemowlę może podróżować samolotem?<sup>81</sup>  
from when my *N.SG* infant *N.SG* can *3.SG.N* travel *INF* airplane *INSTR*  
‘How soon can my infant travel by airplane?’

- (45) Dwoje niemowląt ma na razie spać w jednym łóżeczku.<sup>82</sup>  
two *COLL* infant *GEN.PL* have *3.SG* for the time being sleep *INF* in one *PREP* bed *PREP*  
‘Two infants have to sleep in one bed for the time being.’

## 2.2. Inanimate Nouns

### 2.2.1. *Pluralia Tantum* Nouns

Inanimate nouns generally combine with cardinal numerals except for two instances: i) *pluralia tantum* nouns or ii) nouns denoting paired objects. For this reason, *pluralia tantum* nouns are considered to be defective (Corbett 2000: 174). When *pluralia tantum* nouns need to be quantified by numerals, or to be marked numerically, they must

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<sup>81</sup> [http://www.biletylotnicze.pl/pomoc/od\\_kiedy\\_moje\\_niemowle\\_moze\\_podrozowac\\_samolotem.html](http://www.biletylotnicze.pl/pomoc/od_kiedy_moje_niemowle_moze_podrozowac_samolotem.html)

<sup>82</sup> <http://wiadomosci.onet.pl/1936419,441,item.html>

be marked doubly. For example, the Middle English plural *childre* ‘children’ acquires a second marker of plurality to perform multiple marking. As a result, the old plural form *childre* transformed into a contemporary form *children* by adding a new plural maker *-n* to the old form *childre* (Corbett 2000: 152-53). This multiple marking of plurality in Slavic has been noted by Stankiewicz (1986: 153-170).

To mark plurality doubly, Slavic languages take advantage of the use of collective numerals. When PT nouns require cardinality marking as a countable item, instead of multiple marking in the Middle English, collective numerals perform this function. For example, Polish pluralia tantum nouns, i.e., *skrzypce* ‘a violin’, *nożyce* ‘scissors’, etc., are in the plural forms, but still can be quantified to express cardinality of the items. Therefore, collective numerals are utilized to count the cardinality: *dwoje skrzypiec* ‘two violins’, *dwoje nożyc* ‘two pairs of scissors’, etc.

- (46) Dwoje      nożyc              leży      na stole.  
 two<sub>COLL</sub>   scissors<sub>GEN.PL</sub>   lie<sub>3.SG</sub>   on table<sub>PREP</sub>  
 ‘Two pairs of scissors lie on the table.’

- (47) Pokój      ma              troje              drzwi.  
 room<sub>M.SG</sub>   has<sub>3.SG</sub>   three<sub>COLL.ACC</sub>   doors<sub>GEN.PL</sub>  
 ‘The room has three doors.’

- (48) Mam              czworo      dzieci.  
 (I) have<sub>I.SG</sub>   four<sub>COLL</sub>   children<sub>GEN.PL</sub>  
 ‘I have four children’

### 2.2.2. Nouns indicating pairs of objects

Collective numerals can also quantify plural-only nouns comprising two distinct parts. For instance, *dwoje rękawiczek* ‘two pairs of gloves’, *troje okularów* ‘three pairs of spectacles’, *dwoje spodni* ‘two pairs of trousers’, etc. Collective numerals are less commonly used with pluralia tantum nouns comprising two distinct parts like gloves, boots, socks, etc. than a quantity noun *para* ‘a pair’, which governs its complement in the genitive plural: *dwie pary pończoch* ‘two pairs of stockings’, *trzy pary skarpetek* ‘three pairs of socks’, *cztery pary rękawiczek* ‘four pairs of gloves’, *pięć par butów* ‘five pairs of boots,’ etc.

## 3. THE ANALYSIS OF POLISH COLLECTIVE NUMERALS

As already shown in the previous chapters, the  $\phi$ -features of nouns are analyzed on the basis of the meanings of lexical items, except for case feature. Case feature is a purely syntactic feature, while animacy, gender, etc., are determined by the lexical meanings of the nouns. Declension class (henceforth, DC) of nouns is determined by morphological endings: for example, nouns ending in *-a* belong to DC II, masculine and neuter nouns in *-ø* – DC I. A series of features of nouns can be illustrated with the help of Minimal Lexical Representation (henceforth, MLR), which is first proposed by Rappaport (2006; 2007). The MLR chart can be represented as follows:

(49) Minimal Lexical Representation

/ Phonemic form /	‘ Meaning ’
Meaning	Noun
<b>R-features</b>	<b>F-features</b>
	[declension class: ]
[animal: ]	[animacy: ]
[sex: ]	[gender: ]
[personal: ]	[virile: ] <sup>83</sup>
[cardinality: ]	[number: ]

The MLR in Polish is characterized by the [virile] feature, which is generally considered as secondary gender. This [virile] feature is represented as a separate F-feature in the MLR. In most cases, R- and F-features are reciprocally supportive in determining the value of  $\phi$ -features, but sometimes R-features are in opposition to F-features. For example, a masculine noun in *-a* has contrasting R- and F-features: [sex: m] features and [declension class: II]. In this case, [sex: ] determines [gender: ], which in turn determines DC. So the problem with *poeta* ‘a poet’ is the mismatch between gender and DC; the [sex: ] and [gender: ] are aligned. This contrast also occurs with *dziecko* (neut.) ‘a child’. Here the situation is different: the mismatch is between [sex: ] and [gender: ]. The noun *dziecko* indicates a young human being, which must be either male or female, but its grammatical gender is neuter. In these cases, the contrasting features between R- and F-features solves the problem by adopting the appropriate morphosemantic rule. According to the morphosemantic rule, for instance, the noun *poeta* ‘a poet’ is determined as a masculine noun by [sex: m.] of R-feature. The [sex: m] as R-feature determines the one of F-features, or [gender: m], whereas the DC is lexically specified. The Russian noun *poet* ‘a poet’ differs from the Polish noun *poeta* ‘a poet’ in that [sex: ] determines

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<sup>83</sup> To express the secondary gender of Polish, the [personal: ] feature and its corresponding [virile: ] feature are added to the original chart of MLR by Rappaport (2006, 2007) as R- and F-features, respectively.



[gender: ] which determines DC. Most of all, the features shaded in the MLR chart in (49) are more characteristic in Polish than in Russian and BCS. The [virile:\_] feature is conditionally determined by the combination of the two features: [sex: m] and [personal: +] features. If these two features, i.e., [sex: m] and [personal: +], are valued, then the [virile] feature is valued as [+]. For this reason, the virility marking is regarded as secondary gender (cf. Corbett 1991: 296-297; Sussex and Cubberley 2006: 239-240, 277-278).

### **3.1. Semantic Analysis**

#### ***3.1.1. The Gender Specification of Group Members***

The use of collective numerals specifies a group of people of mixed gender in Polish. For instance, a noun *nauczyciel* ‘a teacher’ generalizes a category of *nauczyciel* ‘a (male) teacher’ and *nauczycielka* ‘a (female) teacher’. In the case of this noun, the use of collective numerals designates that a group is composed with members of mixed gender. Unlike collective numerals, masculine or neuter cardinal numerals do not give gender specification of a group. These nouns like *nauczyciel* ‘a teacher’ can have an alternative use of numerals, either collective numerals or cardinal numerals, depending on the context. Cardinal numerals with feminine nouns can imply that a group consists of members of mixed gender: for instance, *dwie nauczycielki* ‘two teachers’, *trzy studentki* ‘three (female) students’, *pięć koleżanek* ‘five friends’, etc.

#### ***3.1.2. Individuated Meaning vs. Collective Meaning***

In Polish, the contrast between individuated and collective meanings cannot be expressed by the choice of either cardinal or collective numerals because of the strict

observance of the primary and the second gender specification. Virility is expressed by virile forms of cardinal numerals, while the specification of mixed gender is signified by the use of collective numerals. Feminine nouns combine only with cardinal numerals. Russian and BCS collective numerals, in contrast to their cardinal numerals, highlight the totality of entities as a unit, while Polish collective numerals highlight the specification of a mixed gender group rather than the collectivity of the group.

(50) Na lekcjach są zawsze dwaj nauczyciele, a ...<sup>84</sup>  
 at lectures<sub>PREP</sub> are<sub>3.PL</sub> always two<sub>CARD.VIR.NOM</sub> teachers<sub>NOM.PL</sub>, but...  
 ‘There are always two teachers at lectures, but...’

(51) Dwie nauczycielki – Arabka i Żydówka –  
 two<sub>CARD.F</sub> (female) teachers<sub>NOM.PL</sub> – an Arabian and a Jew –  
 prowadzą lekcję jednocześnie.<sup>85</sup>  
 lead a lecture simultaneously.  
 ‘Two (female) teachers—an Arabian and a Jew—lead a lecture simultaneously.’

(52) W jednej ze szkół dwoje nauczycieli  
 in one<sub>PREP</sub> of schools<sub>GEN.PL</sub> two<sub>COLL</sub> teachers<sub>GEN.PL</sub>  
 z uprawnieniami pielęgnarskimi sprawuje opiekę.<sup>86</sup>  
 with<sub>INSTR</sub> nursing case authorization<sub>INSTR.PL</sub> perform<sub>3.SG</sub> care<sub>ACC.SG.F</sub>  
 ‘In one of the schools two teachers take care of the nursing care authorizations.’

<sup>84</sup> <http://korpus.pl/poliqarp/poliqarp.php>

<sup>85</sup> <http://www.rp.pl/artykul/55361,328466.html>

<sup>86</sup> <http://korpus.pl/poliqarp/poliqarp.php?query=dwoje+nauczycieli&corpus=2&showMatch=1&showContext=3&leftContext=5&rightContext=5&wideContext=50&hitsPerPage=10>

## 3.2. Morphological Analysis

### 3.2.1. Substantivised Adjectives

Substantivised adjectives have adjective morphological endings and nominal functions at the same time. Lower numerals combine with nouns in the nominative plural in Polish. Like Concord, subject-predicate agreement (SPA) is also associated with this issue. Therefore, lower numeral phrases always agree with nominative plural forms of nouns and their predicates are in the plural, while higher numerals assign genitive case to nouns in the direct case contexts and their predicates are in the default, neuter singular. The details of SPA will be investigated in a separate section (section 3.3.3.).

#### (53) Polish Substantivised Adjectives

- |   |                                    |
|---|------------------------------------|
| a. dwaj <sub>CARD.VIR</sub> oskarżeni <sub>NOM.PL</sub>       | ‘two (male) accused’               |
| b. dwie <sub>CARD.NON-VIR</sub> oskarżone <sub>NOM.PL.F</sub> | ‘two (female) accused’             |
| c. pięciu <sub>CARD.VIR</sub> oskarżonych <sub>GEN.PL</sub>   | ‘five (male) accused’              |
| d. pięć <sub>CARD.NON-VIR</sub> oskarżonych <sub>GEN.PL</sub> | ‘five (female) accused’            |
| e. pięcioro oskarżonych <sub>GEN.PL</sub>                     | ‘five accused (males and females)’ |

In Polish, examples (53a) and (53b) are different from (53c)-(53e) in that lower numerals behave like adjectives which trigger homogeneous morphosyntax, whereas higher numerals – heterogeneous morphosyntax by the higher numerals’ assigning genitive case to their complement.

### 3.2.2. Mixed Declension Nouns

As mentioned above in section 2.1.1., masculine nouns ending in *-a*, e.g., *mężczyzna* ‘a man’, *tata* ‘a daddy’, *poeta* ‘a poet’, *kolega* ‘a colleague, friend’, *dentysta* ‘a dentist’, *kierowca* ‘a driver’, *wydawca* ‘a publisher’, *obrońca* ‘a guardian’, and *kaleka*

‘a handicap’, etc., do not match between morphology and semantics. This morphosemantic mismatch occurs due to the contrast between R- and F-features. The morphological desinence *-a* of this group of nouns is considered as a marker determining DC. Despite the marker *-a* determining the appropriate DC, these nouns can be masculine because of natural sex value, or are of variable gender. These nouns with the morphosemantic mismatch belong to a special declension class, which is called *mixed declension class*, where such nouns are declined as feminine nouns in the singular, but as masculine nouns in the plural (Bielec 1998: 85).<sup>87</sup>

To further semantic analysis of collective numerals, the Minimal Lexical Representation (MLR) illustrates the mismatch between the morphological marking *-a* and the semantics referring to natural sex.

(54) MLR of ‘*mężczyzna*’

/ mężczyzn- / ‘a man’	
Meaning	Noun
R-features	F-features
	[declension class: II]
[animal: +]	[animacy: +]
[sex: m.]	[gender: m.]
[personal: +]	[virile: +]
[cardinality: +]	[number: sg.]

As shown as in (54), the noun *mężczyzna* ‘a man’ has the morphological ending *-a*, which reflects its DC II, but its lexical meaning is masculine. The R-features of the noun are valued by its lexical meaning: [animal: +], [sex: m], [personal: +], [count: +], and [cardinality: +]. Assuming that the noun is valued [nom] case from an upper projection,

<sup>87</sup> Mixed Declension Class (Deklinacja mieszana)  
(Długosz-Kurczabowa and Dubisz 2006: 220-21; Bielec 1998: 85)

the nominative singular ending *-a* is valued and, in turn, determines its DC. At this point, the [sex: m] as R-feature determines the [gender: m] as F-feature. In this case, the semantic feature of [sex: m] influences the grammatical feature of [gender: m], which is assigned by morphological ending *-a*. The gender is predictable, but the DC is ‘irregular’ and stipulated in the MLR.

In Polish, however, numerals are strictly selected on the basis of primary and secondary gender. Collective numerals designate a group of mixed gender, while cardinal numerals, either virile or non-virile, indicate a group of males or non-males respectively. The issue of virility plays an important role in composing numeral phrases with masculine nouns in *-a*. The masculine noun *mężczyzna* ‘a man’ has its virile form for cardinal numerals. It is semantically impossible for this noun to be interpreted for mixed gender specification. The following examples highlight these distinctions shown as in (55). The virile form *trzej* ‘3’ only produces grammaticality with the virile form of the noun *mężczyźni* in the nominative plural, while the use of the noun with the collective numeral form or non-virile form is ungrammatical.

- (55) W drugim samochodzie jechali            trzej/            \*trzy/    \*troje mężczyźni...<sup>88</sup>  
       in another car<sub>PREP</sub>            were<sub>VIR.PL</sub> going three<sub>CARD.VIR</sub>/three<sub>CARD</sub>/three<sub>COLL</sub> men...  
       ‘Three men were going in another car.’

Unlike masculine or dual-gender nouns in *-a*, there exist some masculine nouns with *-ø* (zero) ending, which refer to both male and female. Such nouns are as follows: *lekarz* ‘a doctor’, *dyrektor* ‘a director’, *doktor* ‘a doctor’, *inżynier* ‘an engineer’, *profesor* ‘a professor’ etc. This kind of noun lacks the corresponding female forms, or despite the

<sup>88</sup> <http://korpus.pl/polqarp/polqarp.php?start=10>

presence of the female forms, they are marginally used with the same meaning. To indicate femininity with these nouns, *pani* is added as *pani profesor* ‘(female) professor’, *pani lekarz* ‘(female) doctor’, *pani inżynier* ‘(female) engineer’, *pani dyrektor* ‘(female) director’, etc. These given nouns can be associated with virile/non-virile cardinal numerals and collective numerals.

(56) Dwaj dyrektorzy szpitali zatrzymani za korupcję!<sup>89</sup>  
 two<sub>CARD-VIR</sub> directors<sub>VIR</sub> hospital<sub>GEN.SG</sub> arrested<sub>PAST.PASS.PART.NOM.PL</sub> for corruption<sub>ACC</sub>  
 ‘Two directors of a hospital were arrested for corruption.’

(57) ...ciekawe dlaczego Słowację reprezentują wicepremier,  
 ...interesting why Slovakia<sub>ACC</sub> represent<sub>3.PL</sub> vice-premier<sub>NOM.SG</sub>,  
 ambasador, dwa konsule, dwa dyrektory departamentu...<sup>90</sup>  
 ambassador<sub>NOM.SG</sub>, two consuls<sub>NOM.SG</sub>, two directors<sub>NOM.SG</sub> department<sub>GEN.SG</sub>  
 ‘...it is interesting why the vice-premier, an ambassador, two consuls, and two directors of the department represent Slovakia...’

(58) Festiwal, ... , uroczyście otworzyło dwoje dyrektorów:  
 festival<sub>ACC.SG,...</sub>, solemnly opened<sub>NEUT.SG</sub> two<sub>COLL.</sub> director<sub>GEN.PL</sub>:  
 Anna Grygiel i Tomasz Kapturkiewicz.<sup>91</sup>  
 Anna Grygiel<sub>NOM</sub> and Tomasz Kapturkiewicz<sub>NOM</sub>  
 ‘Two directors, Anna Grygiel and Tomasz Kapturkiewicz, solemnly opened the festival...’

<sup>89</sup> [http://www.se.pl/wydarzenia/kraj/plaga-korupcji-w-sluzbie-zdrowia\\_60433.html](http://www.se.pl/wydarzenia/kraj/plaga-korupcji-w-sluzbie-zdrowia_60433.html)

<sup>90</sup> [http://www.podhale24.pl/aktualnosci/artykul/4552/Nowy\\_Targ\\_seminarium\\_historykow\\_z\\_udzialem\\_wice\\_premiera\\_Slowacji\\_za\\_zamknietymi\\_drzwiami.html](http://www.podhale24.pl/aktualnosci/artykul/4552/Nowy_Targ_seminarium_historykow_z_udzialem_wice_premiera_Slowacji_za_zamknietymi_drzwiami.html)

<sup>91</sup> [http://www1.atlas.intarnet.pl/index\\_full.html?action=full&id=4977](http://www1.atlas.intarnet.pl/index_full.html?action=full&id=4977)

As shown in (56)-(58), the virile form *dwaj dyrektorzy* ‘two directors’ in (56) indicates that the group consists of male members only, while the non-virile forms *dwa konsule* ‘two consuls’ and *dwa dyrektorzy* ‘two directors’ in (57) imply that the referents to whom *dwa konsule* ‘two consuls’ and *dwa dyrektorzy* ‘two directors’ refer to are all women. Otherwise, their virile forms would be used for male referents. While the forms of those lexical items have zero-ending (–∅), the real world referents are females. That is, the cardinal numeral *dwa* is employed to agree grammatically with the nouns *konsule* and *dyrektorzy*, which semantically refer to females. The use of collective numerals specifies a group of mixed gender as in (58).

### 3.3. Syntactic Analysis

#### 3.3.1. Theoretical Background

The headedness of Polish numeral phrases appears to depend upon various things: numerical values (lower vs. higher numerals), inherent or structural case assignment (i.e., homogeneous vs. heterogeneous morphosyntax), and the Animacy Rule (i.e., secondary gender), etc. A head of a phrase is the foundation, on which other words can syntactically depend in order to extend into a larger phrase or even a sentence. This process of the extension of words may occur either inside one category, i.e., in an endocentric structure, or among more than one category, i.e., in an exocentric structure.

- (59) Ten            nauczyciel    ma    dobrego    psa.  
       this<sub>NOM.SG.M</sub> teacher<sub>NOM.SG.M</sub> has<sub>3.SG</sub> good<sub>ACC</sub> dog<sub>ACC</sub>  
       ‘This teacher has a good dog.’

Example (59) has the structure of S-V-O. The verb *mieć* ‘to have’ has an argument structure, which requires two NPs. Following Chomsky’s Minimalist approach, the adjective ‘*dobr-*’ with uninterpretable case feature, i.e., [case: ] in (60) merges with the noun ‘*pies-*’ with [case: ]. The case feature has not been decided yet, because accusative case is structurally assigned by  $v^\circ$ . This phrase, in turn, merges with  $V^\circ$  to form a verbal phrase VP. The VP merges with *little*  $v^\circ$  that assigns accusative case to the direct object NP ‘*dobr- pies-*’ and theta-marks agent role onto the spec-of- $vP$ . The assignment of case by *little*  $v^\circ$  determines accusative case for the direct object position. The non-quantified phrase *dobrego psa* is in the accusative case. The [animacy: ] feature triggers the occurrence of the Animacy Rule that the genitive case replaces the accusative case for masculine animate nouns. Strictly speaking, in Polish, the Animacy Rule applies to singular nouns of the ‘masculine’ declension. Furthermore, the Animacy Rule applies only to virile nouns in the plural. After  $v^\circ$  assigns accusative case,  $vP$  merges with  $T^\circ$  to form a TP.  $T^\circ$  has three important features: nominative case, tense, and EPP features. The [nom] case is valued to an NP on the spec-of- $vP$ , which is a potential subject of the sentence. EPP feature is the main source to move the NP from the spec-of- $vP$  to the spec-of-TP to fill the position of the spec-of-TP as a subject of a sentence. TP merges with C to form a CP, which is the complete structure of a sentence. The operation *Agree* can be seen in NPs i.e., *ten nauczyciel* ‘this teacher’ and *dobrego psa* ‘a good dog’. These NPs are of the structure of a modifier and a modified. The case feature is reflected as one of the noun features, so the nouns are valued case feature and then the modifiers agree with the modified nouns, or the heads in the phrase. As mentioned before, *Agree* is the feature-sharing mechanism as in subject-predicate agreement or internal agreement (Concord).

In the process of these syntactic derivations, the application of the Animacy Rule engenders the morphosyntactic difference between numerically quantified NPs and non-



quantified NPs in Polish. The Animacy Rule applies differently in the singular and plural paradigm regardless of numerals. When it applies in the plural, it applies only to male personal nouns, i.e., virile nouns.

In the case of lower cardinal numerals, nouns serve as the heads of the whole phrases in that the choice of numerals, either virile or non-virile, is determined by noun heads. That is, case and  $\phi$ -features (i.e., [number: ] and [gender: ] features, etc.) of numerals depend on head, i.e., morphosyntactic locus (Zwicky 1985). Lower numerals behave as modifiers, and nouns – as heads determining morphosyntactic properties. Example (60) below confirms that the head of the numeral phrases, used as the direct object of the transitive verb *mieć* ‘to have’, is the noun *psy* ‘dogs’ in the accusative plural. The numerals serve as adjectives which agree with the head noun *psy* ‘dogs’. It supports that the Animacy Rule in Polish does not apply to non-masculine personal (i.e., non-virile) nouns in the plural paradigm as in (60) below. In the plural, only virile nouns can be affected by the Animacy Rule as in (61). As shown in (60) and (61), the Animacy Rule is closely related to the semantics of the head nouns.

- (60) Ten      nauczyciel    ma dwa/trzy/cztery      psy.  
          this<sub>M.SG</sub> teacher<sub>M.SG</sub> has two/three/four<sub>ACC.PL</sub> dogs<sub>ACC.PL.NON-VIR</sub>  
          ‘This teacher has two dogs.’

- (61) Ten      profesor      ma dwóch/trzech/czterech      studentów    na wykładzie.  
          This<sub>M.SG</sub> professor<sub>M.SG</sub> has two / three / four<sub>ACC.PL.VIR</sub> students<sub>GEN.PL</sub> lecture  
          ‘This professor has two/three/four students in the lecture.’

In contrast to lower cardinal numerals, higher cardinal numerals (5 and above) and collective numerals appear to have morphosyntactically different structures: it seems that

higher cardinal numerals and collective numerals serve as syntactic heads and nouns are their complements. Example (62) below appears as if the non-virile form of the cardinal numeral *pięć* ‘5’ functioned as a head. Example (63) suggests that collective numerals are similar to higher cardinal numerals in that the numeral heads themselves receive the structural case, i.e., accusative case from *little v°*, and assign genitive case to their noun complements.

(62) Ten      nauczyciel    ma [pięć      psów].

this<sub>M.SG</sub> teacher<sub>M.SG</sub> has five<sub>ACC</sub> dogs<sub>GEN.PL.NON-VIR</sub>

‘This teacher has five dogs.’

(63) Ten      nauczyciel    ma [dwoje/czworo/pięcioro dzieci].

this<sub>M.SG</sub> teacher<sub>M.SG</sub> has two/three/four<sub>ACC.PL</sub> dogs<sub>GEN.PL.NON-VIR</sub>

‘This teacher has two children.’

The Polish cardinal numeral system is characterized by its virile forms. Virile numerals have different forms from non-virile forms: *dwa* vs. *dwaj*, *trzy* vs. *trzej*, *cztery* vs. *czterej*, *pięć* vs. *pięciu*, etc. Despite the difference between virile and non-virile forms, Polish numeral phrases including collective numerals preserve two syntactic patterns: homogeneous and heterogeneous patterns. Polish lower numerals have the homogeneous pattern of case assignment both in oblique cases and in accusative cases: the virile numeral *dwaj* ‘2’ in (64a) and the non-virile *dwie* ‘2’ in (64c) agree with their heads. Example (64b) is an exception, which displays heterogeneous pattern (cf. the accusative-subject hypothesis, Przepiórkowski 1999).

(64) a. *Dwaj      mężczyźni    mieszkają w pokoju              z    dwoma      kotami.*

two<sub>VIR.NOM</sub> men<sub>VIR.NOM.PL</sub> live      in an apartment with two<sub>CARD.INSTR</sub> cats<sub>CARD.INSTR</sub>

‘(The) two men live in an apartment with two cats.’

b. Dwóch mężczyzn mieszka na farmie...<sup>92</sup>

two<sub>VIR.GEN</sub> men<sub>GEN.PL</sub> live in a farm...

‘Two men live in a farm.’

c. Dwie młode kobiety śmiertelnie zatrwały się w piątek.<sup>93</sup>

two<sub>CARD-NOM.PL</sub> young<sub>NOM.PL</sub> women<sub>NOM.PL</sub> fatally (be) poisoned on Friday.

‘Two young women were fatally poisoned on Friday.’

Examples (65) and (66) illustrate that higher cardinal numerals and collective numerals have heterogeneous morphosyntax in direct case positions, whereas homogeneous morphosyntax in oblique case positions.

(65) a. Pięciu chłopców wracało nad ranem z dyskoteki...<sup>94</sup>

five<sub>CARD.VIR</sub> boys<sub>GEN.PL</sub> were returning towards morning from club...

‘Five boys were returning from a club towards morning.’

b. Owca z pięcioma nogami<sup>95</sup>

Sheep with five<sub>CARD.INSTR</sub> legs<sub>INSTR.PL</sub>

‘Sheep with five legs’

(66) a. Widzę pięcioro dzieci.

(I) see five<sub>COLL</sub> children<sub>GEN.PL</sub>

‘I see five children.’

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<sup>92</sup> <http://www.warszawa.pl/stara/news/view.6133.html>

<sup>93</sup> <http://polskalokalna.pl/wiadomosci/malopolskie/krakow/news/dwie-kobiety-smiertelnie-zatruly-sie-czadem.1236585.3320>

<sup>94</sup> [http://www.se.pl/wydarzenia/kronika-kryminalna/pijak-zabi-mi-synka\\_66112.html](http://www.se.pl/wydarzenia/kronika-kryminalna/pijak-zabi-mi-synka_66112.html)

<sup>95</sup> <http://www.filmweb.pl/f127999/Owca+z+pi%C4%99cioma+nogami.1954>

b. Tuż przed świtem *pięcioro znajomych* wybiera się biwak w góry.<sup>96</sup>

just before dawn five<sub>COLL</sub> acquaintances<sub>GEN.PL</sub> intend camp in mountains

‘Just before dawn five acquaintances are about to set off for a camp to a mountain.’

Regardless of different morphosyntactic structures of numerals, cardinal numerals and collective numerals function as modifiers, whereas nouns serve as syntactic heads, with which modifiers agree in case and  $\phi$ -features. Like in Russian and BCS, Polish nouns are the morphosyntactic locus, which is associated with case assignment, concord, and subject-predicate agreement. The idea of ‘abstract quantitative case’ proposed by Rappaport (2002; 2003a; 2003b) will be applied to analyze the structure of collective numerals and its headedness.

#### 3.3.1.1. Abstract Quantitative Case

This section will provide theoretical support for the NP-hypothesis with ‘abstract’ case, i.e., *quantitative case*. Abstract quantitative case has no “distinctive morpheme” and it can be only “expressed in the form of a syncretism” (Rappaport 2003b: 159). As mentioned before, the presence of abstract quantitative case of numerals is associated with heterogeneous morphosyntax, while the absence of this quantitative case is associated with homogeneous morphosyntax. Agree is the major mechanism of this abstract quantitative case theory. Pre-valued abstract case of numerals is spread onto nouns and modifiers. The abstract quantitative case of numerals, nouns, and modifiers is spelled out by morphological syncretism via the operation Agree.

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<sup>96</sup> <http://fdb.pl/film/63300-tuz-przed-switem>

Let us go over the details of the morphosyntactic properties of numeral phrases. The standard distinction of primary gender (i.e., masculine, feminine, neuter) in singular Polish nouns is reduced to the binary distinction of secondary gender: masculine personal and non-masculine personal (Rappaport 2003a). This [gender: masculine personal] feature is closely related to the Animacy Rule, which triggers the replacement of accusative case by genitive case in a direct object position.

The core of this approach is that pre-valued abstract case (i.e., ‘quantitative case’) of numerals is replaced by accusative or genitive in direct case positions by morphological rules via Agree (Rappaport 2003a: 128). This abstract [case: quantitative] feature of higher cardinal numerals is copied to nouns the numerals modify and then the quantitative case in the nouns is unconditionally spelled out in direct case positions. Finally the numerals themselves are spelled out by syncretism with another case required by the context. In contrast to the presence of pre-valued quantitative case resulting in heterogeneous morphosyntax, the absence of abstract quantitative case is associated with homogeneous morphosyntax in oblique case positions. The spell-out rules of abstract quantitative case in direct case positions are summarized as follows:

(67) Spell-Out Rules of Abstract Quantitative Case in Polish

- a. [case: quantitative]  $\rightarrow$  [case: genitive] / \_\_\_\_ [gender: masculine personal]
- b. Elsewhere, [case: quantitative]  $\rightarrow$   $\emptyset$  (zero desinence)

(Rappaport 2003a: 131)

(68) a. Widzę [pięciu chłopców]<sub>ACC</sub>.

(I) see five<sub>GEN</sub> boys<sub>VIR.GEN.PL</sub>

‘I see five boys.’

$$\begin{array}{l}
\text{b. } \text{widzę} \text{ --- } [\{\text{pięć-}\} \quad \{\text{chłopiec-}\}] \rightarrow [\text{pięciu chłopców}] \\
\quad [\text{number: } ] \longleftrightarrow [\text{number: pl.}] \\
\quad [\text{gender: } ] \longleftrightarrow [\text{gender: masc.}] \\
\quad [\text{case: } \text{quant} \rightarrow \text{gen}] \longleftrightarrow [\text{case: } \text{quant} \rightarrow \text{gen}] \\
\quad \text{(by morphological rules)}
\end{array}$$

Example (68a) can be analyzed as (68b). In (68b) the numeral  $\{\text{pięć-}\}$  and the masculine personal noun  $\{\text{chłopiec-}\}$  are syntactically invisible, because the  $[\text{case: } ]$  feature is not valued yet. As soon as the numeral merges with the noun, the lexically determined  $[\text{gender: masc.}]$  and  $[\text{number: pl.}]$  features are copied from the noun, which has its inherent value, and then the abstract quantitative case is copied to the noun, whereby the quantitative case is spelled out as the genitive. The numeral  $\{\text{pięć-}\}$  itself is spelled out as a result of syncretism with the genitive case because of its  $[\text{gender: masculine personal}]$  feature. According to (67a), this spell-out process makes the sentence (68a) grammatical. The spell-out rules for non-masculine personal nouns are as follows:

(69) Non-Masculine Personal Noun

$$\begin{array}{l}
(\text{widzę}) \quad [ \{\text{pięć-}\} \quad \{\text{kobiet-}\}]_{\text{ACC}} \rightarrow [\text{pięć}_{\text{ACC}} \text{ kobiet}_{\text{GEN}}]_{\text{ACC}} \\
\quad [\text{number: } ] \longleftrightarrow [\text{number: pl.}] \\
\quad [\text{gender: } ] \longleftrightarrow [\text{gender: f.}] \\
\quad [\text{case: } \text{quant} \rightarrow \text{acc}] \longleftrightarrow [\text{case: } \text{quant} \rightarrow \text{gen.}] \\
\quad \text{(zero desinence)}
\end{array}$$

As shown in (69), the quantitative case of the numeral  $\{\text{pięć-}\}$  is spelled out as the  $[\text{case: acc}]$  by taking zero-desinence, which is attached to the numeral stem. The quantitative case of non-masculine personal noun *kobieta* ‘a woman’ is realized by syncretism with

genitive case. That is, as in (69), the numeral phrase *pięć kobiet* ‘five women’ is spelled out and it is grammatical. The adoption of the quantitative case can account for the use of genitive case, which replaces accusative case for masculine personal. The quantitative case theory is supported by the accusative-subject constructions (the accusative-subject hypothesis cf. Przepiórkowski 1999).

(70) [pięciu chłopców] śpi na podwórzu.

‘[Five<sub>GEN</sub> boys<sub>GEN.PL</sub>] are sleeping in the courtyard.’

(Rappaport 2003a: 131)

(71) \*Ci/tych pięciu studentów leżało.

These<sub>NOM/ACC</sub> five<sub>VIR</sub> students<sub>GEN.PL</sub> lay<sub>NEUT.SG</sub>

‘These five heroes lay.’

The genitive case of the numeral *pięć* ‘five’ in (70) cannot be explained with genitive-accusative case, because the numeral phrase serves as the subject of the sentence. As shown in (71), the nominative demonstrative pronoun *ci* ‘these’ does not produce a grammatical construction, whereas the accusative demonstrative pronoun does. In this respect, one can conclude that Polish higher cardinal numerals have no nominative case (Przepiórkowski 1999; Rappaport 2003a). The zero-suffixation of the abstract quantitative case and subject-predicate agreement of higher numerals are all related to the absence of the nominative case. The issues of subject-predicate agreement will be examined in section 3.3.3. So far section 3.1.1 recapitulated the kernel of the abstract quantitative case and its spell-out rules in Polish by Rappaport (2003a).

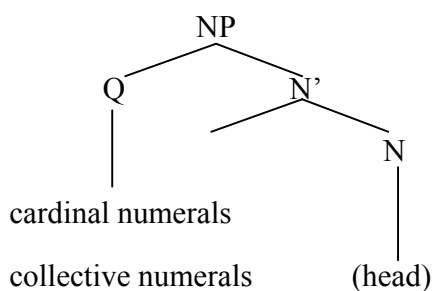
### 3.3.2. Headedness of Polish Collective Numerals

#### 3.3.2.1. Syntactic structure of Polish collectives

In the previous chapters, it is observed that nouns are heads of numeral phrases in both Russian and BCS including collective numeral substantives, e.g., BCS *dvojica* ‘2’, *trojica* ‘3’, *četvorica*, ‘4’, *petorica* ‘5’, etc., which, as regular nouns with nominal features, merge with their complements as the heads of the whole NPs. Like Russian and BCS, syntactic heads of Polish collective numerals are nouns which determine  $\phi$ -features and case feature.

The syntactic structures of Polish numeral phrases, at first, appear that higher cardinal numerals and collective numerals had the QP-headed structure, where numerals are heads of the phrases. However, Polish numeral phrases have NP-headed structures as in (72), because nouns determine  $\phi$ -features, case, and all the semantic factors as the determinants of concord and the loci of morphosyntactic marking.

#### (72) NP-headed Numerals



As shown in (72), the NP-headed structure is exemplified by (73) and (74), where head nouns in the nominative plural are modified by demonstrative pronouns, numerals, and adjectives. Lower cardinal numerals exhibit that the nouns *przyjaciele* ‘friends’ in the nominative plural and *żaby* ‘toads’ in the accusative plural function as the subject of (73) and the object of (74), respectively. In Polish lower numerals do not have pre-valued



abstract quantitative case, so that they produce homogeneous constructions as in (73) and (74).

- (73) *Ci dwaj przyjaciele często pomagają sobie.*  
 these<sub>VIR</sub> two<sub>CARD.VIR</sub> friends<sub>NOM.PL.VIR</sub> often help<sub>3.PL</sub> REFLEXIVE<sub>DAT</sub>  
 ‘The two friends often help each other.’

- (74) *Zobaczyłem te dwie martwe żaby.*  
 (I) saw<sub>M</sub> those<sub>ACC.PL</sub> two<sub>CARD.ACC</sub> dead<sub>NOM.PL</sub> toads<sub>ACC.PL</sub>  
 ‘I saw those two dead toads.’

Polish collective numerals also take the NP-headed structures and behave like higher cardinal numerals. As mentioned before, the mixed gender specification of collective numerals inhibits the Animacy Rule from applying to collective numerals as in (75).

- (75) *Tuż po wyjściu z restauracji widzę dwoje ludzi.*<sup>97</sup>  
 right after go-out from restaurant see two<sub>COLL</sub> people<sub>GEN.PL</sub>  
 ‘Right after going out from the restaurant, (I) saw (the) two people.’

The collective numeral phrase *dwoje ludzi* ‘two people’ implies that there are one man and one woman. As soon as the collective numeral {*dwoj-*} merges with the noun {*ludzi-*}, the [gender: non-masculine] and [number: pl.] features are copied from the noun to the numeral. In contrast, the quantitative case in the numeral is copied to the noun. As a final stage for Phonological Form (PF), the quantitative case is replaced by the accusative case by morphological rules, when the accusative case is assigned by *little v*<sup>o</sup>. As a result, the

<sup>97</sup> <http://www.goryonline.com/blogwpis-1724>

numeral {*dwoj-*} is spelled out by the Spell-Out Rules of (67) above: [case: quantitative] → Ø, i.e., [*dwoje ludzi*] as the direct object of (75).

### 3.3.2.2. Evidence of Headedness of Collective Numerals

The headedness issue of Polish collective numerals can be further investigated in two ways. The Animacy Rule, which is closely related to the realization of genitive-accusative case, and the attributive modifiers of numeral phrases. Subject-predicate agreement gives us a clue to the analysis of headedness of Polish collective numerals, but it will be examined in section 3.3.3. Polish case marking is overt with the help of morphological case endings. Semantic factors of head nouns play important roles in determining case marking of non-quantified NPs as well as quantified NPs. Case marking, i.e., case assignment is examined in section 3.3.4.

#### *3.3.2.2.1. The Animacy Rule*

The Animacy Rule supports the NP-headed structure of Polish numeral phrases. The Animacy Rule is directly related to the features, e.g., [person: ], [number: ], [gender: ], and [animacy: ], etc., resulting from semantic factors of head nouns of numeral phrases. The following (76) and (77) represent how the semantic factors of lexical items are associated with the Animacy Rule. Example (76) shows singular case marking, while (77) – plural case marking, which is closely related to the Animacy Rule in Polish.

#### (76) The Realization of the Animacy Rule in the Singular Paradigm

a. *Zapraszamy pracowitego studenta na uniwersytet.*

(we) invite<sub>I.PL</sub> hard-working<sub>M.ACC.SG</sub> student<sub>M.ACC.SG</sub> to university<sub>ACC.SG</sub>

‘We invite a hard-working (male) student to the university.’

b. Zapraszamy *pracowitą studentkę* na uniwersytet.

(we) invite<sub>I.PL</sub> hard-working<sub>F.ACC.SG</sub> student<sub>F.ACC.SG</sub> to university<sub>ACC.SG</sub>

‘We invite a hard-working (female) student to the university.’

c. Kupiliśmy *pięknego psa*.

(we) bought<sub>I.PL</sub> pretty<sub>F.ACC.SG</sub> dogs<sub>M.ACC.SG</sub>

‘We bought a pretty dog.’

Examples (76a) and (76c) demonstrate that in the singular paradigm, masculine animate nouns without the morphological ending *-a* take an accusative case form, which is syncretic to the genitive case, i.e., *pracowitego studenta* ‘a hard-working student’ and *pięknego psa* ‘a pretty dog’, respectively. In other words, the [animacy: +] feature of the lexical items, licenses masculine singular nouns of masculine declension to replace the accusative case by the genitive case. In the plural paradigm, the [gender: masculine personal], or virile feature of nouns authorizes the use of the genitive-accusative case in (77) below.

#### (77) The Realization of the Animacy Rule in the Plural Paradigm

a. Zapraszamy *pracowitych studentów* na uniwersytet. (masculine personal)

(we) invite<sub>I.PL</sub> hard-working<sub>M.ACC.PL</sub> students<sub>M.ACC.PL</sub> to university<sub>ACC.SG</sub>

‘We invite hard-working (male) students to the university.’

b. Zapraszamy *pracowite studentki* na uniwersytet. (non-masculine personal)

(we) invite<sub>I.PL</sub> hard-working<sub>F.ACC.PL</sub> student<sub>F.ACC.PL</sub> to university<sub>ACC.SG</sub>

‘We invite hard-working (female) students to the university.’

c. Kupiliśmy *piękne* *psy*. (non-personal)

(we) bought<sub>I.PL</sub> pretty<sub>M.ACC.PL</sub> dogs<sub>M.ACC.PL</sub>

‘We invite pretty dogs.’

Let us turn to numerically quantified nouns with regard to the Animacy Rule. Example (78) shows the application of the Animacy Rule in lower numeral phrases, while (79) – in higher numeral phrases. The Animacy Rule applying to collective numerals is exemplified by (80).

(78) *Lower Cardinal Numerals*

a. widzę *dwóch* *studentów*.

(I) see two<sub>CARD.VIR.ACC</sub> students<sub>GEN.PL</sub>

‘I see two (male) students.’

b. widzę *dwie* *studentki*.

(I) see two<sub>CARD.ACC</sub> (female) students<sub>ACC.PL</sub>

‘I see two (female) students.’

c. widzę *dwa* *koty*.

(I) see two<sub>CARD.ACC</sub> cats<sub>ACC.PL</sub>

‘I see two cats.’

Unlike non-virile forms of lower cardinal numerals, virile forms are subject to the Animacy Rule. Example (78a) can be analyzed as follows: [case: quantitative] → [case: genitive]/\_\_[gender: masculine personal]. Polish lower cardinal numerals forms homogeneous morphosyntax in any case positions. However, the virile forms of lower numerals *dwaj* ‘2’, *trzej* ‘3’, and *czterej* ‘4’ have no corresponding accusative forms,

since masculine personal forms are spelled out by the syncretism with the genitive case (Rappaport 2003a: 133). Now let us compare the constructions of higher cardinal numerals with those of collective numerals.

(79) Higher Cardinal Numerals & collective numerals

a. widzę pięciu studentów. (masculine personal)

(I) see<sub>I.SG</sub> five<sub>CARD.VIR.ACC</sub> students<sub>VIR.GEN.PL</sub>

‘I see five (male) students.’

b. widzę pięć studentek. (non-masculine personal)

(I) see<sub>I.SG</sub> five<sub>CARD.NON-VIR.ACC</sub> (female) students<sub>NON-VIR.GEN.SG</sub>

‘I see five (female) students.’

c. widzę pięć kotów. (non-personal)

(I) see five<sub>CARD.NON-VIR.ACC</sub> cats<sub>NON-VIR.GEN.SG</sub>

‘I see five cats.’

(80) a. widzę dwoje aktorów. (collective numeral; non-virile)

(I) see two<sub>COLL.ACC</sub> actors<sub>GEN.PL</sub>

‘I see two actors (a male plus a female).’

b. widzę pięcioro bohaterów. (collective numeral; non-virile)

(I) see five<sub>COLL.ACC</sub> heroes<sub>GEN.PL</sub>

‘I see five heroes.’ (a group of mixed gender)

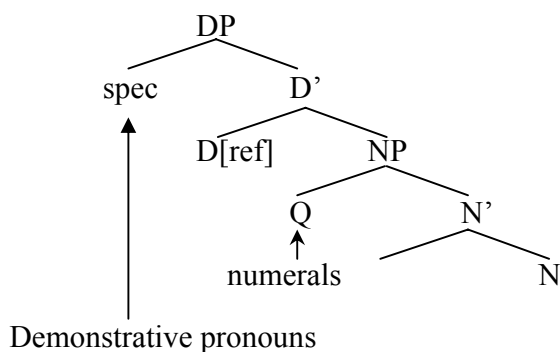
As shown above, higher cardinal numerals and collective numerals have the same syntactic behaviors in both direct and oblique case positions: the abstract [case: quantitative] is copied to the nouns which the numeral modifies and then both the noun

and the numeral itself are spelled out by morphological rules via the operation Agree. In the case of (79a), the [case: quantitative] of the numeral *pięciu* ‘5’ changes into the [case: genitive] because of the spell-out rules: [case: quantitative] → [case: genitive]/\_\_[gender: masculine personal]. In contrast, in (79b), the abstract [case: quantitative] is spelled out as the [case: accusative] with zero-desinence, because of the [gender: non-masculine personal] feature of the noun: [case: quantitative] → [case: accusative]/\_\_[gender: non-masculine personal], as is the same case with (79c). As shown in (80), collective numerals follow the pattern of the non-virile higher numerals: [case: quantitative] → Ø /\_\_[gender: non-masculine personal], since there is no [animacy] feature on Polish collective numerals as in Russian higher numerals (e.g., \**ètix pjat*’<sub>ACC-INANIM.</sub> *ljudej* ‘these five people’). Regardless of numeric values, collective numerals have the spell-out rules in direct case contexts: [case: quantitative] → Ø, although the absence of [case: quantitative] permits the homogeneous pattern of case assignment.

### 3.3.2.2.2. *Attributive Modifiers*

Polish has four frequently-used attributive modifiers: i) demonstrative pronouns, ii) possessive pronouns, iii) regular adjectives, and iv) quantifiers. Except for quantifiers, the first three attributive modifiers share the same morphological endings, which decline under the Polish case system. These attributive modifiers must agree with their syntactic heads. Agreement patterns of attributive modifiers can predict the syntactic head of numeral phrases in Polish. Demonstrative pronouns mark the referential feature of the phrase on the spec-of-DP as in (81) below. Furthermore, if necessary, possessive pronouns can merge between DP and NP (Alexiadou 2001; Franks 1995; Rappaport 2000). These attributive modifiers merge on the spec-of-NP and they agree with their head nouns in gender, number, and case features.

(81) The Locus of Demonstrative Pronoun of Numeral Phrases.



The concord of demonstrative pronouns with head nouns supports the idea that nouns are syntactic heads of collective numeral phrases. In Polish, both the genitive form and accusative form of demonstrative pronouns can modify nouns functioning as heads. As shown in (82), the higher cardinal numeral phrase *pięć kobiet* ‘five women’ is modified by the demonstrative pronoun *tych* and *te* ‘these’, which are in the genitive plural and in the accusative plural, respectively. In contrast to (82), example (83) shows that the demonstrative pronoun *te* ‘these’ in the accusative produces an ungrammatical construction.

(82) *Tych/ te pięć kobiet pojechało do Warszawy.* (Franks 1995: 133)

these (gen/nom-acc) five women(gen.pl.) went(neut.sg.) to Warsaw(gen.)

(83) a. \**Te pięciu mężczyzn było miłych.*

b. ?\**Te million mężczyzn było miłych.* (Przepiórkowski 2006)

Derwojedowa and Linde-Usiekniewicz (2003: 36) shows that the demonstrative pronouns *te* and *tych* both can be used with feminine (e.g., *kobieta* ‘a woman’) or non-masculine personal nouns (e.g., *dzieci* ‘children’, *skrzypce* ‘a violin’, etc.) in the constructions where predicate-adjectives agree with their subjects as in (84).

- (84) a. (Te/tych) Pięcioro dzieci było zadowolone.  
 b. (Te/tych) Dwoje dzieci było zadowolone.  
 c. (Te/tych) Dwoje skrzypiec było gotowo.

(Derwojedowa and Linde-Usiekniewicz 2003: 36)

To summarize, the form of demonstrative pronouns can be analyzed by the spell-out rules of the abstract quantitative case. Assuming that Polish higher numerals have no nominative case, example (83a) shows that the accusative form of the demonstrative pronoun *te* cannot modify neither the numeral *pięciu* nor the noun *mężczyzn*, which are spelled out by the syncretism with the genitive case because of the [gender: masculine personal] of the noun (Rappaport 2003a). In (83b) the accusative demonstrative pronoun *te* is marginally possible, but is not commonly used. In (85) and (86) masculine personal nouns require the demonstrative pronouns to be in the Genitive-Accusative, because the accusative form of the demonstrative pronouns must be replaced by the genitive case by the morphological rules of the Animacy Rule.

- (85) Widziałam *tych pięciu mężczyzn* na koniach...<sup>98</sup>

(I) saw these<sub>ACC</sub> five<sub>VIR.ACC</sub> men<sub>GEN.PL</sub> on horseback

‘I saw these five men on horseback.’

- (86) *Tych pięcioro chłopaków* daje mi siłę każdego dnia.<sup>99</sup>

these<sub>ACC</sub> five<sub>COLL.ACC</sub> boys<sub>GEN.PL</sub> give me vigor every day.

‘These five boys give me vigor every day.’

<sup>98</sup>

[http://www.palac.szczecin.pl/portal\\_literacki/PL/PDF/A.%20O.%20Te%20historie%20opowiedzial%20mi%20stary%20las.pdf](http://www.palac.szczecin.pl/portal_literacki/PL/PDF/A.%20O.%20Te%20historie%20opowiedzial%20mi%20stary%20las.pdf)

<sup>99</sup> [http://www.viva-tv.pl/forum/wiadomosci.htm?forum\\_id=295310&topic\\_id=1138991](http://www.viva-tv.pl/forum/wiadomosci.htm?forum_id=295310&topic_id=1138991)



That is, the adjectival spell-out rules are closely related to virility of nouns. Masculine nouns prevent attributive modifiers from being in the accusative, while non-masculine nouns allow attributive modifiers to be either in the accusative or in the genitive. The spell-out rules of adjectival attributive modifiers are the following:

(87) The Spell-Out Rules for Adjectivals

- a. [case: quant.] → [case: gen. / (acc.)]
- b. \*[case: quant.] → [case: acc]/\_\_[gender: masculine personal ]

As shown in (83a) and (85), virile forms of higher cardinal numerals cannot take accusative modifiers because of the Animacy Rule. In contrast to virile forms, non-virile higher cardinal numerals and collective numerals can take either accusative or genitive modifiers in direct cases. Example (84) illustrates that both accusative and genitive forms are possibly used for collective numerals. The spell-out rules in (87a) apply to higher cardinal numeral and collective numerals: e.g., *tych/te dwoje ludzi* ‘these two people’, *tych/te pięć kobiet* ‘these five women’, *tych/te pięcioro studentów* ‘these five students’. However, virile forms of higher cardinal numerals cannot take accusative forms of modifiers: e.g., *\*te/tych pięciu studentów* ‘these five students’ and *\*te/tych pięciu mężczyzn* ‘these five men’.

### 3.3.3. Subject-Predicate Agreement (SPA)

Subject-Predicate Agreement in Polish is simpler than that in other Slavic languages, lower numerals related to the homogeneous morphosyntax triggers the plural agreement, while higher numerals and collective numerals related to heterogeneous morphosyntax triggers the neuter singular agreement, or default (Sussex and Cubberley

2006: 325-30; Swan 2003: 553-560). This idea is supported by the accusative-subject hypothesis that higher cardinal numerals in subject positions are in the accusative case, not in the nominative case, which is in charge of subject-predicate agreement. That is, the lack of nominative case engenders the neuter singular agreement of predicates (Franks 1995; Przepiórkowski 1999, 2004; Rappaport 2003a).

(88) a. Dwaj nowi aktorzy przyszli w studio.

two<sub>NOM.VIR</sub> new<sub>NOM.PL.VIR</sub> actors<sub>NOM.PL.VIR</sub> came<sub>3.PL.VIR</sub> in studio<sub>ACC.SG</sub>

‘Two new actors came to the studio.’

b. Dwóch nowych aktorów przyszło w studio.

two<sub>ACC.VIR</sub> new<sub>GEN.PL</sub> actors<sub>GEN.PL</sub> came<sub>3.NEUT.SG</sub> in studio<sub>ACC.SG</sub>

‘Two new actors came to the studio.’

(89) a. Dwie kobiety przyszły na uniwersytet.

two<sub>NOM.NON-VIR</sub> women<sub>NON.PL</sub> came<sub>3.PL.NON-VIR</sub> to university<sub>ACC.SG</sub>

‘Two women came to the university.’

b. Dwa psy przyszły w pokój.

two<sub>NOM.NON-VIR</sub> dogs<sub>NON.PL.NON-VIR</sub> came<sub>3.PL.NON-VIR</sub> into room<sub>ACC.SG</sub>

‘Two dogs came into the room.’

(90) a. Pięć kobiet było /\*były na wykładzie.

five<sub>CARD.NOM</sub> women<sub>GEN.PL</sub> were<sub>3.SG.NEUT</sub>/were<sub>3.PL.NON-VIR</sub> at lecture

‘Five women were at the lecture.’

b. Pięciu studentów było na wykładzie.

five<sub>NOM.VIR</sub> students<sub>GEN.PL</sub> were at lecture

‘Five students were at the lecture.’

c. Pięcioro ludzi było na wykładzie.

Five<sub>COLL.NOM</sub> people<sub>GEN.SG</sub> were at lecture

‘Five people were at the lecture.’

Subject-predicate agreement is determined by number and primary gender (e.g., m./f./n.) features in the singular paradigm, whereas by number and secondary gender associated with [gender: masc. pers.] feature. Corbett (1991:284) defines the Polish subject-predicate agreement system as follows:

(91) Predicate Agreement Forms in Polish

		Singular	Plural
Masculine	Personal	był	Byli
	Non-personal		były
Feminine		była	
Neuter		było	

(Corbett 1991: 284)

### 3.3.4. Case Assignment

#### 3.3.4.1. Direct Case

Nominative and accusative cases are both regarded as direct cases. Direct cases must be case-assigned by functional categories, i.e., [nom] by T° and [acc] by v°. Within the Minimalist framework by Chomsky (1995), these direct cases are called structural case. Structural case is different from inherent case, which is assigned by lexical categories.

As far as the accusative is concerned, it is important to review how the Animacy Rule applies in Polish. In Russian the Animacy Rule applies to animate nouns belonging to masculine declension without the desinence *–a*, regardless of singular or plural, whereas the Animacy Rule in Polish applies to singular and plural in a different way. The accusative case of animate nouns of masculine declension is replaced by the genitive in the singular, while the accusative case of virile nouns is replaced by the genitive in the plural. Refer to the Animacy Rule below in (92).

(92) The Animacy Rule

	<i>Singular</i>				<i>Plural</i>				
<i>Acc</i>	anim.	Pers.	acc =gen	anim.	anim.	Pers.	m.	Acc =gen	virile
		Non-pers.					f.	Acc =nom	non- virile
	Inanim.		acc = nom	inanim.	inanim.				

#### 3.3.4.2. Oblique Case

Oblique cases are assigned by lexical categories. Prepositions are the most common inherent case assigners. That is, oblique cases are realized by ‘unvalued case feature’ in numerals, which makes noun heads to receive case directly from lexically pre-determined inherent case feature (Rappaport 2002, 2003a). Like Russian and BCS, Polish has various prepositions assigning genitive, dative, accusative, instrumental, and prepositional cases. However, the instrumental case of collective numeral phrases exhibits syntactically unpredictable property of morphosyntax. Instrumental case, in

general, displays homogeneous case assignment, but the instrumental case of Polish collectives exhibit the heterogeneous pattern, which is different from that of Russian and BCS (Bielec 1998; De Bray 1980; Klemensiewicz 1955; Sussex and Cubberley 2006; Szober 1963). For example:

- (93) Z            dwójgiem/ pięciorgiem    dzieci  
          with<sub>INSTR</sub>   two/            five<sub>COLL.INSTR</sub>   children<sub>GEN.PL</sub>  
          ‘with two/five children’

This idiosyncratic phenomenon shown in (93) can be analyzed by the peculiarity of the occurrence of pre-valued abstract quantitative case of the numeral, which is copied to the noun it modifies. Then, the quantitative case of the noun is spelled out as in the genitive case and the numeral itself – as in the instrumental case. Instrumental case assignment is supposed to exhibit homogeneous morphosyntax, but this instance of the instrumental case of Polish collective numerals demonstrates heterogeneous morphosyntax as in (94). The instrumental case of Polish collective numerals is the unique instance exhibiting heterogeneous case marking in Slavic morphosyntax.

## Chapter Five: Conclusion

### 1. SUMMARY OF STUDY

This dissertation has investigated Slavic collective numerals in descriptive and formal terms on the basis of three Slavic languages: Russian, Bosnian/Croatian/Serbian (BCS), and Polish. This research has defined the uses of collective numerals and analyzed their semantic and morphosyntactic properties on the basis of the operation *Agree* (Chomsky 1995). As a major morphosyntactic issue, the headedness of collective numeral phrases in the three Slavic languages has been examined.

To further this research, I adopted the two concepts proposed by Rappaport (2002, 2003, 2006, 2007): i) Minimal Lexical Representation (MLR) and ii) Quantitative Case (QC). MLR consists of two sets of referential and formal features, which are the minimal and essential information stipulated by lexical items. MLR provides the semantic and grammatical informative features for the analysis of the properties of nouns, which select collective numerals. With regard to heterogeneous and homogeneous morphosyntax, abstract quantitative case served as a clue to the headedness of Slavic collective numerals. Whether the pre-valued abstract quantitative case is present on numerals predicts either heterogeneous or homogeneous morphosyntax of the numeral phrases under the unitary condition of headedness. Spell-out forms of collective numerals are due to the direct or indirect result of morphological syncretic rules. The Animacy Rule applies differently in each language.

In analyzing the headedness of Slavic collective numeral phrases, I claimed that nouns are the heads of Slavic collective numeral phrases on the grounds that numerals, adjectives, and other modifiers agree with the noun, which determines the various

modifiers. Although higher cardinal and collective numerals exhibit heterogeneous morphosyntax, where numerals appeared to serve as heads by assigning genitive case and receiving structural case, the virile forms of Polish higher numerals reveal that the numerals are not the genuine heads of the numeral phrases. In addition, the Animacy Rule is applied by the [animacy] feature as a nominal property. The use of Polish secondary gender, i.e., virility, supports NP-headedness. Furthermore, the demonstrative pronoun in the accusative numeral phrase *ètix pjat' studentov* 'these five students' reveals that the demonstrative pronoun *ètix*<sub>GEN</sub> 'these' agrees with the head noun *studentov*<sub>GEN</sub> 'students'. In this respect, nouns of Slavic numeral phrases are the locus of morphosyntactic marking and the determinant of concord (Zwicky 1985).

In Chapter Two, I surveyed Russian collective numerals in comparison with lower and higher cardinal numerals. Similar to BCS and Polish, Russian collective numerals are prevalently combined with masculine animate nouns. Cardinal numerals indicate that the members of a group are all female. Russian collective numerals are used for the following things: i) to specify a totality, collectivity, or adhesiveness as an aggregate, ii) to indicate a gender specification, iii) to express definiteness, iv) to quantify pluralia tantum nouns and nouns of paired objects, etc. I analyzed Slavic collective numerals from the point of view of semantics, morphology and syntax. The semantic approach distinguishes *tri*<sub>CARD</sub> *studenta* 'three students' from *troje*<sub>COLL</sub> *studentov* 'three students'. The only difference between *√pjatero soldat* 'five soldiers' and *\*/?pjatero generalov* results from the semantics of the two nouns. For morphological reasons, masculine nouns and dual gender nouns ending in *-a* can combine with collective numerals. As MLR shows, the [gender: m] feature contrasts with the [declension class: II], to which most feminine nouns belong. This anomaly favors the use of collective numerals more than the use of *dva mužčiny* 'two men' and *\*dve mužčiny* 'two men',

which reveal the conflicting morphological inflection between gender and declension class. Adjectival nouns are more likely to be used with collective numerals than with cardinal numerals. From the syntactic point of view, Russian collective numerals have the same distribution as cardinal numerals. Higher cardinal numerals and collective numerals have ‘pre-valued abstract quantitative case’, which is spread onto nouns and modifiers to be ready for spell-out (Rappaport 2002, 2003). The valued [case: quantitative] feature is spelled out by morphological syncretic rules: [case:quantitative]→[case:genitive]/\_\_[animacy: +],[case: acc], [case: quantitative] → Ø, i.e., [case: quantitative]/\_\_ elsewhere. The homogeneous pattern of case assignment is triggered by the lack of the pre-valued abstract quantitative case, while the heterogeneous pattern – by its presence.

In Chapter Three, I investigated the use of BCS collective numerals and their morphosyntactic behaviors. BCS numerals are characterized by their indeclinability in case-required positions. Moreover, higher cardinal numerals have no oblique case forms. In contemporary BCS, there are three types of collective numerals, which I called ‘collective numbers’: i) collective numeral substantives, ii) collective numerals, and iii) collective numeral adjectives. Collective numeral substantives (e.g., *dvojica* ‘two’, *trojica* ‘three’, *četvorica* ‘four’, etc.) indicate a group of males only, while collective numerals (e.g., *dvoje* ‘two’, *troje* ‘three’, *četvoro* ‘four’, *petoro* ‘five’, etc.) specify a group of mixed gender. Collective numeral adjectives morphosyntactically behave like regular adjectives. The combination of cardinal numerals plus feminine nouns indicates a female-only group (e.g., *tri studentice* ‘three (female) students’, *pet prijateljica* ‘five (female) friends’, etc.). Similar to Russian, BCS collective numerals most frequently combine with masculine and dual gender nouns ending in *-a*. Furthermore, BCS collective numerals are analogous to Russian in that adjectival nouns and pluralia tantum nouns are used with



collective numerals. Although BCS numerals do not decline, nouns are the heads of collective numeral phrases in BCS. From a syntactic perspective, indeclinable collective numerals can be construed as the result of direct spell-out of pre-valued abstract quantitative case with *-o/-e* endings. Their spell-out rules are as follows: [case: quantitative] → *-o/-e*. For instance, [case: quantitative] → *petoro* by adding *-o* ending to the numeral stem {*petor-*}.

In Chapter Four, I examined Polish collective numerals and their syntactic behavior. Polish is characterized by separate forms of numerals. The secondary gender distinguishes masculine personal from non-masculine personal. This secondary gender is morphologically marked by virile forms. Polish collective numerals specify a mixed gender group, and quantify pluralia tantum nouns or nouns of paired objects. Neuter nouns ending in *-ę*, which indicate young animals, can be used with collective numerals as in Russian and BCS. Unlike Russian, permitting the phrase *dvoe ženščin* ‘two women’ as a colloquial variant, Polish collectives do not combine with masculine or feminine nouns, which exclude the opposite gender in meaning, i.e., *mężczyzna* ‘man’ (\**troje mężczyzn* ‘three men’), *kobieta* ‘woman’ (\**dwoje kobiet* ‘two women’), and *studentka* ‘female student’ (\**pięcioro studentek* ‘five (female) students’), etc. This distinction occurs, because Polish collective numerals indicate the mixed gender specification rather than the collective meaning as a totality or as an aggregate. With regard to heterogeneous/homogeneous morphosyntax, abstract quantitative case theory can support the idea that nouns are the heads of numeral phrases regardless of their case patterns, i.e., direct or oblique cases. Furthermore, the *accusative-subject hypothesis* proposed by Przepiórkowski (1999) can extend to the hypothesis that no nominative case exists in Polish higher numerals and collective numerals. The Animacy Rule applies only within the domain of transitive verbs (*vP*). In Polish, the Animacy Rule applies to quantified

animate nouns in the singular, while to masculine personal in the plural. Spell-out rules of abstract quantitative case of collective numerals are as follows: [case: quantitative] → [case: genitive]/\_\_[gender: masculine personal]. Elsewhere, [case: quantitative case] → Ø (zero-desinence).

As discussed in the previous chapters, nouns are the genuine heads of collective numeral phrases despite the dissimilarities of numeral structures among Russian, BCS, and Polish. The headedness of collective numerals is not different from that of higher cardinal numerals except BCS collective numeral substantives, which serve as head nouns. The structures of lower cardinal numerals vary according to each language.

With regard to the use of collective numerals, the following chart summarizes the commonalities and differences of collective numerals among three Slavic languages.

	<b>Russian</b>	<b>BCS</b>	<b>Polish</b>
Value of numbers	Russian collective numerals can be formed with numbers from 2 to 10.	2 to 99	2 to 99
Forms	one ( <i>dvoe, troe, četvero, pjatero</i> , etc.)	three (Collective numeral substantives, Collective numerals, Collective numeral adjectives)	one ( <i>dwoje, troje, pięcioro</i> , etc.)
Gender specification	No (mixed or male gender)	Yes	Yes (mixed gender)
Totality/collectivity	Yes	Yes	Yes
Subject-Predicate Agreement	Neuter Singular/ Plural	<b>Dvojica</b> studenata <b>su</b> bila/bili... (Pl.) <b>Dvoje</b> studenata je bilo... (Sg./ (Pl.))	Neuter Singular only

		Cf. <b>Dve djevojke su bile... (Pl.)</b>	
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## 2. FURTHER STUDY

Nouns have the [case] feature and  $\phi$ -features necessary for the process of feature-valuing by the operation Agree. These numerically quantified noun phrases deserve to be investigated more with regard to DP (Determiner Phrase) projections, which are responsible for referential feature (Longobardi 1994, Pereltsvaig 2007) and definiteness. Definiteness marking is controversial, because Slavic languages have no articles. It is a next step to discover how definiteness is marked in numeral phrases or noun phrases. Most Slavic modifiers including demonstrative pronouns must modify head nouns in [person], [number], [gender], and [case]. This fact is in conflict with the locus of referential feature or definiteness marking. In Slavic languages which have neither definite nor indefinite articles, definiteness marking plays an important role in determining word order, or vice versa. The headedness issue of DPs is still open to debate. The headedness of DPs is closely related to subject-predicate agreement, since articleless Slavic languages exhibit the correlation between DP and finite forms of predicates.

In addition to these syntactic issues associated with numeral phrases, i.e., DPs/NPs, more field researches on numeral phrases are needed to acquire authentic data from native speakers, who belong to a wide range of different groups of age, gender, occupation, and education. Furthermore, aside from Russian, BCS, and Polish, other Slavic languages are worthwhile to be surveyed to analyze the differences and similarities of them with each other. Especially Upper Sorbian, lower Sorbian, and Slovene, which

still have dual number, are important as sources to gather the information of historical change in the Common Slavic numeral system.

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## **Vita**

Hyoung Sup Kim was born in Seoul, Korea, on January 01, 1972, as the second son of Jung-Woong Kim and Yang-Ja Lee. After completing his work at Hong-Ik High School, he attended Chung-Ang University, where he received a Bachelor of Arts in Russian Language and Literature in February 1997. He had Russian language training at The Pushkin State Russian Language Institute at Moscow and The Herzen State Pedagogical University at St. Petersburg in 1992 (40 days) and 1994 (5 months). During the following year, he entered the Graduate School of Chung-Ang University where he completed all the course work in 1999. In September 2001, he entered the Graduate School of The University of Texas at Austin where he received a Master of Arts in Slavic Languages and Literatures in 2004. To improve his Russian, he attended Russian Summer School of Middlebury College, VT from 2003 to 2006.

Permanent address: 224-78 8/5 Seongbuk-Dong, Seongbuk-Gu, Seoul,  
Republic of Korea, 136-022

This dissertation was typed by the author.