Mixed Agreement with a Hybrid Pronoun in Latvian

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Hyun-Jong Hahm. 2010. Mixed Agreement with a Hybrid Pronoun in Latvian. *Language and Information 14.2*, 85–101. This paper discusses mixed agreement triggered by hybrid pronouns. Hybrid pronouns considered in this paper show number discrepancy in that they are plural in form but singular in meaning. When predicates agree with these hybrid pronouns, the puzzle of number agreement arises: finite verbs show syntactic agreement, while predicate adjectives show semantic agreement. This is explained by three factors in grammar of agreement, the feature specification of agreement controllers, the types of agreement targets, and the Agreement Marking Principle that mediates the relation of two poles of agreement, controllers and targets. (**University of Texas at Austin**)

Key words: hybrid pronoun, mixed agreement, phi-features, agreement controller and target

1. Introduction

Pronominal forms often encode different registers such as degrees of respect (Head 1978). Many languages make a distinction of a polite or distant pronoun from a familiar or intimate pronoun by using a different number feature from their notional number. For instance, although the second person pronoun *you* refers to one or more than one addressee in contemporary English, Middle English second person pronominal forms differed in number. The second person singular pronouns *thou/thee* (nominative/accusative respectively) were used to address a single intimate addressee, while the second person plural pronouns *ye/you* (nominative/accusative respectively) were used as a mark of politeness towards an addressee as well as the usage of referring to multiple addressees.

Latvian, a Baltic language, is also one of the languages distinguishing a polite pronoun from an informal pronoun using number features. The second person singular pronouns (for example, *tu* in nominative case) always refer to a single infor-

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mal/familiar addressee, while the second person plural pronouns (for example, *Jūs* in nominative case) refer to either a single polite or more than one addressee, as shown below (Hahm 2010):[1]

(1) a. Tava   māja   ir   skaista.
       your.SG house.SG be.3 beautiful.SG
       'Your (one informal addressee) house is beautiful.'

   b. Jūsu   māja   ir   skaista.
      your.PL house.SG be.3 beautiful.SG
      'Your (one formal or more than one addressee) house is beautiful.'

The possessive pronoun *Jūsu* in second person and plural number in the above example can refer to either a single or multiple addressees. On the other hand, the singular one *Tava* can only refer to a single addressee.

In Latvian, predicates agree with their subjects in number. They exhibit interesting agreement patterns when triggered by the polite pronoun *Jūs*. This paper provides a formal analysis of these patterns, which does not exist in the previous literature. When the plural pronominal subject refers to one polite addressee, verbs and predicate adjectives exhibit mixed agreement, where targets agree in different agreement features with a single controller:

(2) a. Tu   esi   augstsirdīga.
       you.SG be.2SG generous.FEM.SG
       'You (one female addressee) are generous.'

   b. Jūs   esat   augstsirdīga.
      you.PL be.2PL generous.FEM.SG
      'You (one formal female addressee) are generous.' (Hahm 2010)

The hybrid pronoun *Jūs*, referring to a single addressee, triggers singular number agreement on the predicate adjective *augstsirdīga*, while it triggers plural number agreement on the verb *esat*.

This research gives an analysis of mixed agreement triggered by the hybrid pronoun *Jūs* in Latvian. The agreement patterns in Latvian resemble those in French as we will observe in the next section. In recent work by Wechsler and Hahm (to appear), we propose an analysis of agreement in several languages including French. In this study, I apply our analysis to Latvian, whose data were collected from native speakers of Latvia. This paper will progress as follows: Section 2 shows how mixed agreement was explained in previous analyses. Section 2.1 discusses Pollard and Sag (1994) and Kathol's (1999) approaches to mixed agreement, and also briefly introduces the theory of agreement in Wechsler and Zlatić (2000, 2003). They all are analyzed in the framework of Head-driven Phrase Structure Grammar. Section 2.2 introduces the approach of Wechsler and Hahm (to appear) given in the framework of Lexical-Functional Grammar. In Section 3, the formal analysis of mixed agreement in Latvian will be given. Section 4 discusses an interaction of prepositions and their complements with regard to case and number features in Latvian. Section 5 concludes this paper.

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[1] The pronoun *Jūs* is capitalized when referring to a polite addressee.

2. Previous Approaches[2]

Polite pronouns trigger interesting mixed agreement patterns in languages, and yet there exist very few analyses in syntax and most of them limit their analyses on French. I give an overview of the analyses of agreement in Pollard and Sag (1994), Kathol (1999), and Wechsler and Zlatić (2000, 2003) in Section 2.1. All of these approaches are given in the framework of Head-driven Phrase Structure Grammar (HPSG). In Section 2.2, I introduce Wechsler and Hahm's (to appear) approach.

2.1 Pollard and Sag (1994) and Kathol (1999)

In Pollard and Sag (1994), agreement is understood as the systematic variation in referential features of indices of the agreement controller and target (Pollard and Sag 1994: 60). These referential INDEX features include person, number, and gender features, which are part of the CONTENT feature set that contribute to semantic interpretation (Pollard and Sag 1994: 24-26). For example, the anaphor *herself* and its antecedent share third person, singular number, and feminine gender INDEX features. The anchoring condition, on the other hand, is a device to connect between these referential INDEX features and the referents in discourse contexts. That is, the pronoun *she* is anchored to a single female non-participant.

Let us consider their analysis of mixed agreement. A well-known example of mixed agreement with a polite pronoun is that in French. The second person singular pronoun *tu* 'you.SG' refers to an addressee who is in an intimate/familiar relationship with a speaker, while the second person plural pronoun *vous* 'you.PL' refers to a single polite or more than one addressee, as in Latvian. The pronoun *vous* is a hybrid pronoun in that its form is plural but it can be notionally singular referring to a single person. This hybrid pronoun triggers mixed agreement, syntactic agreement on verbs but semantic agreement on predicate adjectives. Consider the following well-known example:

(3) a. Vous   êtes   belle.
      you.PL are.2PL beautiful.FEM.SG
      'You (a formal female addressee) are beautiful.'

    b. Vous   êtes   belles.
      you.PL are.2PL beautiful.FEM.PL
      'You (multiple female addressees) are beautiful.'
      (Pollard and Sag 1994: 96)

In the example (a), the subject refers to a single polite addressee which is expressed by the predicate adjective *belle* in singular.

Pollard and Sag (1994: 96-97) propose that the pronoun *vous* possesses the second person and plural number INDEX features, and yet exceptionally it is not required to be anchored to an aggregate, so that this pronoun *vous* can have either an aggregate or non-aggregate anchor. The following is the lexical entry for the polite pronoun *vous* given by Pollard and Sag (1994: 96):

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[2] This section is based on Chapter 3 in Hahm (2010) where detailed overviews of previous analyses on mixed agreement can be found.

(4)
$$
\begin{bmatrix}
\text{CATEGORY} & \begin{bmatrix} \text{HEAD} & \textit{noun} \\ \text{SUBCAT} & \langle\ \rangle \end{bmatrix} \\[3ex]
\text{CONTENT} & \begin{bmatrix} \text{INDEX} & \boxed{1}\begin{bmatrix} \text{PER} & \textit{2nd} \\ \text{NUM} & \textit{plur} \end{bmatrix} \end{bmatrix} \\[3ex]
\text{CONTEXT} & \begin{bmatrix} \text{C-INDICES} & \begin{bmatrix} \text{SPEAKER} & \boxed{2} \\ \text{ADDRESSEE} & \boxed{1} \end{bmatrix} \\[3ex] \text{BACKGROUND} & \left\{ \begin{bmatrix} \text{RELATION} & \textit{honor} \\ \text{HONORER} & \boxed{2} \\ \text{HONORED} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
$$

The pronoun *vous* has the second person and plural number INDEX features in CONTENT, and the coindexation between their value and that of the pragmatic CONTEXT feature ensures the pronoun to be anchored to a polite addressee.

In their approach, the subject-verb agreement is handled by INDEX features. Pollard and Sag (1994: 96) posit that the second person plural verbs select their subjects with the second person plural INDEX features. Thus they can agree with the polite pronoun *vous* regardless of its notional number since the pronoun has the plural INDEX number. On the other hand, they posit that predicate adjectives grammatically assign particular gender features to their subjects, but they require subjects to have a number feature constrained by the semantic anchoring condition. For example, the singular predicate adjective *belle* in (3) assigns feminine gender to its subject but selects the subject with a semantically non-aggregate anchor. This allows the singular adjective to be predicated of the hybrid pronoun *vous*, as long as it refers to a non-aggregate. Their core argument in the number feature of the predicates is that the verbs are sensitive to grammatical INDEX features of their controllers, whereas the predicate adjectives are sensitive to semantics.

Pollard and Sag's (1994) approach that French predicate adjectives agree in pure semantic number raises an empirical problem as noted in Wechsler (2004). When the pluralia tantum nouns such as *lunettes* 'glasses' denote a single item (notionally singular), predicate nouns agree in 'singular' as shown in (5) below. However, predicate adjectives must agree in plural even when the pluralia tantum nouns refer to a single entity as in (6):

(5) ces   lunettes de soleil sont
    this/that.PL glasses of sun   be.3PL
    {un   super modèle   /des   supers modèles }.
    a.MASC.SG great model.MASC.SG/INDEF.PL great   model.MASC.PL
    'These sunglasses are a great model (one pair) / great models (more than one pair).' (Emilie Destruel, p.c., also quoted in Hahm 2010)

(6) Ces   lunettes de soleil sont/*est   jolies/*jolie
    this/that.PL glasses of sun   be.3PL/ *SG pretty.FEM.PL / *FEM.SG
    'These sunglasses (one or multiple pairs) are pretty.' (Hahm 2010)

Pollard and Sag posited that the number feature value of the predicate adjectives is based on the notional number of their subjects. It explains their semantic agreement with the pronoun *vous* in (3), but it cannot explain why the predicate adjective cannot agree in singular when a single entity is denoted in (6).

Now let us consider Kathol's (1999) analysis. He follows Pollard and Sag's approach that INDEX features include person, number and gender. The main difference from Pollard and Sag's approach comes from the addition of another AGR feature set. Both AGR and INDEX are the formal agreement phi-features including number and gender, while person feature only belongs to INDEX. It is because the AGR features are syntactic head features, are sensitive to morphology, and accordingly explain the NP-internal agreement. In his approach, all lexical categories inflecting for agreement possess agreement features, and the agreement phenomenon is understood as a structure sharing of agreement features between the controllers and their targets.

In Kathol (1999), French mixed agreement with the polite pronoun *vous* is explained by the pronoun's lexical specification and what agreement feature each predicate aims at in between AGR and INDEX. Recall that the pronoun *vous* refers to either one polite or more than one addressee. To explain the ambiguous meaning of the pronoun *vous*, he posits that this pronoun's INDEX number value is unspecified, while its morphological plural number is specified in the syntactic AGR feature, as shown in its lexical entry (Kathol 1999: 248 (45)):

$$
(7) \begin{bmatrix} vous \\[4pt] \dots \mid \text{AGR} \quad \begin{bmatrix} \text{NUM} & pl \end{bmatrix} \\[10pt] \dots \mid \text{INDEX} \quad \begin{bmatrix} \text{PER} & 2 \\ \text{NUM} & \\ \text{GEND} & \end{bmatrix} \end{bmatrix}
$$

The unspecified number (and gender) value in INDEX depends on the anchoring condition, and thus the pronoun *vous* can have either singular or plural INDEX number according to its notional number. When the pronoun *vous* refers to a single addressee, the AGR number is plural but the INDEX number is singular.

Kathol (1999: 240) diagrams his analysis of mixed agreement triggered by the pronoun *vous* as follows:

(8)
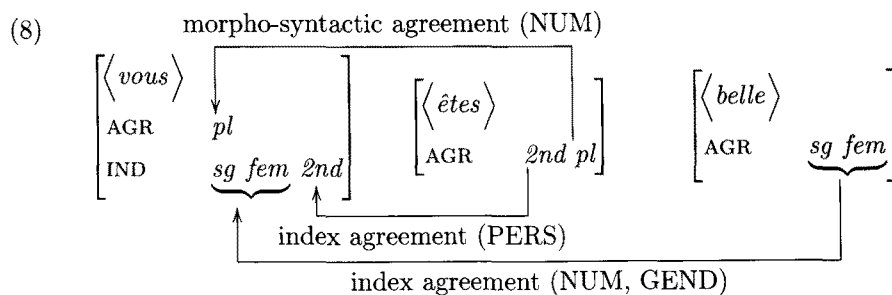
In his theory, agreement features of subjects and their predicates are structure-shared. As shown in the above diagram, the verbs aim at AGR for number, but

INDEX for person. However, predicate adjectives aim at AGR features for number. In that way, the verb *êtes* agrees in plural, whereas the adjective *belle* agrees in singular when the pronoun *vous* refers to a single person and becomes singular in INDEX.

Kathol's theory faces a problem as well. He posits that the NP-internal agreement is explained by syntactic AGR feature agreement (Kathol 1999: 240-241). As shown above, predicate adjectives agree in singular with the polite pronoun *vous* since the pronoun can have either number feature in INDEX by the anchoring condition. On the other hand, since the pronoun *vous* possesses the plural number in AGR as shown in its lexical entry (7), its attributive modifiers in NP-internal structures are expected to agree in plural according to his analysis. There are some affective adjectives that can modify pronouns in French, as in English *Lucky you!, Poor you!*, etc. In Wechsler and Hahm (to appear), we find that those affective attributive adjectives show semantic agreement with the pronoun *vous*:

(9) a. Pauvre vous!
         poor.SG you.PL
         'Poor you (a single polite addressee)!'

     b. Pauvre-s vous!
         poor-PL you.PL
         'Poor you (more than one addressee)!'

In Kathol's approach, both attributive modifiers and finite verbs aim at the AGR number feature. Then, both of them are expected to agree in plural since the pronoun *vous* has only plural number in AGR. He fails to explain how attributive adjectives can agree in singular with the polite pronoun.

The Pollard and Sag (1994) and Kathol's (1999) analyses are developed further in Wechsler and Zlatić (2000, 2003). Building on the approaches of Pollard and Sag (1994) and Kathol (1999), they distinguish between two agreement feature sets, CONCORD and INDEX, which are both part of the formal syntactic system.[3] In addition to the grammatical CONCORD and INDEX agreement, there is another kind of agreement that results from semantic composition, in which items that are semantically unified must have consistent semantics. Wechsler and Zlatić (2000, 2003) call this last type *pragmatic agreement*. These three types of agreement are necessary to account for all instances of agreement.

An agreement controller such as a noun or pronoun carries both CONCORD and INDEX agreement feature sets. The CONCORD features are related to morphological properties and are HEAD features. They include number and gender features as well as case. As discussed in Pollard and Sag (1994), the bound anaphor and antecedent agreement is the INDEX feature agreement. Therefore, gender and number features belong to both CONCORD and INDEX features since they are related to morphological information as well as referential index.

Finite verbs also tend to agree in INDEX. This is understood naturally from the diachronic perspective that the verb's inflectional morphology derives histor-

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[3] The CONCORD is analogous to AGR in Kathol (1999). King and Dalrymple (2004) also follow this two way distinction in syntactic agreement features in the LFG framework.

ically from incorporated pronouns and continues functioning like an incorporated pronoun in pro-drop contexts (Bresnan and Mchombo 1987). The view of the verbs as INDEX targets is supported in that there seems no language where verbs agree in case, a CONCORD feature. The following is a summary of the differences between CONCORD and INDEX agreement features:

(10) Two grammatical feature sets on a nominal controller (Wechsler and Zlatić 2003)

CONCORD	INDEX

• Origin: trigger's morphological properties such as declension class.
• Features:
  CASE, NUMBER, GENDER.
 	
• Targets:
  attributive modifiers within NP, secondary predicates, etc.
• head feature
	• Origin: trigger's semantic properties such as sex and cardinality.
	• Features:
	  PERSON, NUMBER, GENDER.
	• Targets:
	  bound pronouns, finite verbs, etc.
	• features of the referential INDEX; coindexation

When the values of a word's CONCORD and INDEX features differ, they trigger mixed agreement. The mixed agreement triggered by Serbian/Croatian noun *deca* can exemplify this. The noun *deca* 'children' triggers feminine and singular agreement on attributive adjectives but triggers semantic agreement in neuter gender and plural number on pronouns (Wechsler and Zlatić 2000, 2003). It is explained by the noun *deca*'s lexical specification, the feminine gender and singular number features in CONCORD but the neuter gender and plural number in INDEX. By pragmatic agreement, the masculine pronoun can antecede the noun *deca* when it refers to a group of boys. This three-way distinction of agreement plays an important role in the analysis given in this paper, which will be shown as we go on.

2.2 Wechsler and Hahm (to appear)

This section illustrates Wechsler and Hahm's (to appear) approach to mixed agreement, which solves the problems arisen in Pollard and Sag (1994) and Kathol's (1999) analyses of French agreement, discussed in the previous section. Our approach is formalized in the framework of Lexical Functional Grammar (LFG). LFG is a nontransformational, lexicalist theory which is well-suited for typologically diverse languages (for the formalism, see Bresnan 2001; Dalrymple 2001; Falk 2001).

Wechsler and Hahm (to appear) adopt a three-way distinction of Wechsler and Zlatić (2000, 2003). The CONCORD and INDEX feature sets are both part of the formal syntactic system, which is separated from pure semantic (pragmatic) agreement. Let us consider the core arguments of Wechsler and Hahm (to appear). Agreement targets can behave differently depending on their controllers. In English, for instance, verbs agree syntactically with a pluralia tantum noun such as *glasses,*

scissors, and *pants*, as shown in (11), but semantically with a coordinated subject as in (12):

(11) a. His clothes are/*is dirty.

b. His clothing *are/ is dirty.

(12) a. His lifelong companion and the editor of his autobiography is/are at his bedside. (is: 1 person / are: 2 people)

b. To err and (to) forgive **are** equally/both human.

c. To start a war and (to) blame the enemy **is** hypocritical.
    (Wechsler 2004, 2005)

This dual behavior, syntactic vs. semantic agreement, of the verbs is due to the types of their agreement controllers. Some agreement controllers specify a certain number feature. In (11) the noun *clothes* possesses plural number but the noun *clothing* possesses singular number, and their agreement targets agree with them accordingly. On the other hand, there are controllers lacking a phi-feature.[4] A non-headed coordinated structure is an example. Because they lack a syntactic head, even when each conjunct is an NP with a certain phi-feature, the coordinated NP in the mother node does not possess the phi-feature. As shown in (12), these con-joined phrases trigger semantic agreement on verbs since the verbs cannot check for a relevant number feature of the coordinated structures.[5] Based on the obser-vation of one target's dual behavior in agreement, Wechsler and Hahm (to appear) propose an important principle explaining why an agreement target can show a dual behavior:

(13) Agreement Marking Principle (AMP):

An agreement target checks the trigger for a syntactic phi feature, assign-ing that feature's semantic interpretation to the trigger denotation if no syntactic feature is found. (Wechsler and Hahm *to appear*)

When a controller lacks a feature that its target aims at, the target defaults to semantic agreement and it provides a semantic interpretation to its controller. Let us consider how the Agreement Marking Principle and agreement can be formal-ized in the framework of Lexical Functional Grammar (LFG). The targets' feature checking of their controllers is captured with constraining equations (notated =c),

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[4] See Hahm (2010) for the discussion of the agreement cases triggered by common nouns that lack both CONCORD and INDEX features, which she calls trans-phi-feature nouns. According to her analysis, we expect semantic agreement of all agreement targets when agreeing with these trans-phi-feature nouns.

[5] There are also languages where agreement is syntactically constrained: only one of the conjuncts functions as a controller. In close conjunct agreement, the conjunct that is located closest to the target controls agreement. Or, the agreement can be syntactically constrained to have a default value regardless of the conjuncts. These can be also affected by word order within a language.

and their semantic contribution is expressed by the projection function σ from f-structure to semantic structure. Consider the following example of LFG lexical entries for the English verb forms *swims* and *swim*:[6]

(14) a. *swims,*   V: ($\uparrow$PRED) = 'swim <SUBJ>'
                    ($\uparrow$SUBJ NUM) $=_c$ SG $\vee$
                    [non-aggregate(($\uparrow$SUBJ)$_\sigma$) $\wedge$ ¬($\uparrow$SUBJ NUM)]

      b. *swim,*   V: ($\uparrow$PRED) = 'swim <SUBJ>'
                    ($\uparrow$SUBJ NUM) $=_c$ PL $\vee$
                    [aggregate(($\uparrow$SUBJ)$_\sigma$) $\wedge$ ¬($\uparrow$SUBJ NUM)]

The first line of the lexical entries provides the meaning and argument structure of the words. For instance, the verb *swims* denotes an event of 'swim' and it takes one subject argument. The second equation expresses the constraint that the verb needs to check their subjects for the number feature. The plural verb is required to check the plural feature of the subject, for instance. The constraint given in the last line is activated when the target fails to check for the phi-feature according to the Agreement Marking Principle (13) above. The verb *swim*, for example, assigns the aggregate meaning to its subject when the subject lacks the number feature.

Now consider mixed agreement with French *vous* 'you.PL'. The sentence with mixed agreement, shown in (3) above, and the sentence with a pluralia tantum noun, shown in (6) above, are repeated here:

(15) a. Vous êtes   belle.
          you.PL are.2PL beautiful.FEM.SG
          'You (a formal female addressee) are beautiful.' (Pollard and Sag 1994: 96)

      b. Ces   lunettes de soleil sont/*est   jolies/*jolie
          this/that.PL glasses of sun   be.3PL/ *SG pretty.FEM.PL / *FEM.SG
          'These sunglasses (one or multiple pairs) are pretty.' (Hahm 2010)

As we observed, the predicate adjectives agree semantically with the pronoun *vous* but syntactically with the pluralia tantum noun *lunettes*. However, the finite verbs constantly show syntactic agreement with both types of controllers. The different agreement patterns of the predicates are due to the lexical specification of the subject controller and the type of the target. As we discussed earlier, finite verbs are INDEX targets, whereas adjectives are CONCORD targets. Now consider controllers. Pluralia tantum nouns possess plural number in both CONCORD and INDEX, which let all predicates agree in plural. On the other hand, we argue that the pronoun *vous* is unspecified for number in CONCORD although it has a plural number INDEX feature. According to Agreement Marking Principle given in (13), CONCORD targets default to semantic agreement due to its lack of the number

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[6] See Hahm (2010) for the abbreviatory convention of the lexical entries.

feature in CONCORD, unlike INDEX targets that can check for the feature in question.[7]

The lack of the CONCORD number feature of the pronoun *vous* is supported by the unexpected semantic agreement of attributive adjectives, shown in (9) above and repeated here:

(16) Pauvre vous!
poor.SG you.PL
'Poor you (a single polite addressee)!'

Attributive adjectives are a typical syntactic agreement (CONCORD) target across languages. However, this is not the case with the polite pronoun *vous*. It is so because the attributive adjectives cannot check for the number feature of the pronoun *vous*. The lack of the CONCORD number feature of the pronoun *vous* forces the CONCORD targets default to semantic agreement, and accordingly a certain referential meaning is assigned to the pronoun. Therefore, the different agreement patterns result from a cooperative relation between two poles of agreement, controllers and targets, which is controlled by the Agreement Marking Principle (see Hahm (2010) for more detailed discussion). The next section applies the analysis of French mixed agreement, introduced in this section, to that of Latvian.

3. Analysis of Latvian predicate Agreement with hybrid controllers

Different agreement patterns are manifested by different types of controllers (whether they possess certain phi-features or not) and different types of agreement targets (whether they are sensitive to CONCORD or INDEX features). And, the Agreement Marking Principle, proposed in Wechsler and Hahm (to appear), mediates the relationship between the agreement controllers and targets. The last section discussed how our approach explains French mixed agreement triggered by the polite pronoun *vous*. This pronoun lacks the number feature in CONCORD but possesses the plural number feature in INDEX, and therefore the INDEX target must agree in plural, but the CONCORD targets default to semantics.

Latvian agreement patterns resemble those in French in that the hybrid pronoun triggers mixed agreement. As shown in (2) earlier, the hybrid polite pronoun *Jūs* triggers mixed agreement on targets:

(17) a. Tu esi augstsirdīga.
you.SG be.2SG generous.FEM.SG
'You (one female addressee) are generous.'

b. Jūs esat augstsirdīga.
you.PL be.2PL generous.FEM.SG
'You (one formal female addressee) are generous.'

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[7] See Wechsler and Hahm (*to appear*) for the discussion of how the lexical property of polite plural pronouns lacking CONCORD features solves the puzzle, contradicting the Agreement Hierarchy in Corbett (1979; 2006: 206-233), that adjectives show more semantic agreement than verbs with polite pronouns.

    c. Jūs   esat   augstsirdīgas.
      you.PL be.2PL generous.FEM.PL
      'You (multiple female addressees) are generous.' (Hahm 2010)

The singular pronoun *tu* refers to a single addressee without expressing politeness, and triggers the corresponding number agreement. Verbs agree in plural regardless of the pronoun *Jūs*'s notional number. Predicate adjectives are in singular if the pronoun refers to a polite addressee, and otherwise they are in plural. Participles also show semantic agreement with the polite pronoun *Jūs*:

(18) a. Tu   esi   par daudz strādājusi.
        you.SG be.2SG too much work.PART.FEM.SG
        'You (one female addressee) have been working too much.'

      b. Jūs   esat   par daudz strādājusi.
        you.PL be.2PL too much work.PART.FEM.SG
        'You (one formal female addressee) have been working too much.'

      c. Jūs   esat   par daudz strādājušas.
        you.PL be.2PL too much work.PART.FEM.PL
        'You (multiple female addressees) have been working too much.'

When the pronoun *Jūs* refers to a single individual, participles also agree in singular number regardless of the number value of the controller. Thus, predicate adjectives and participles agree semantically, unlike finite verbs. It is simple to analyze. The data shown in the previous section convince us that Latvian works the same in agreement with French.

    First, consider the lexical entry of the pronoun *Jūs*. The hybrid pronoun *Jūs* possesses a plural number feature in INDEX but it lacks CONCORD features. The lexical entry for this pronoun *Jūs* can be specified in (a), which can be abbreviated as in (b):

(19) a. *Jūs*, N   (↑PRED)   = 'PRO'
                      (↑IND PERS) = 2
                      (↑IND NUM) = PL

      b. *Jūs*, N$_{[2PL]}$

The pronoun expresses the INDEX number feature but not the CONCORD number feature. Therefore, the INDEX target such as verbs agrees in plural INDEX number that the pronoun supplies, whereas the CONCORD target such as predicate adjectives and participles agree semantically by failing to find the CONCORD number feature of the controller.

    The following simplified lexical entries in (20) show the constraints on agreement of the verb *esat* 'be.2PL' and the predicate adjective *augstsirdīga* 'generous.FEM.SG' in (17) and the participle *strādājusi* 'work.PART.FEM.SG' in (18):

(20) a. *esat*, V: (↑SUBJ INDEX NUM) $=_c$ PL ∨
               [aggregate((↑SUBJ)$_\sigma$) ∧ ¬(↑SUBJ INDEX NUM)]

b. *augstsirdīga*, A; *strādājusi*, PART:

$(\uparrow\text{SUBJ CONC NUM}) =_c \text{SG} \vee$

$[\text{non-aggregate}((\uparrow\text{SUBJ})_\sigma) \wedge \neg(\uparrow\text{SUBJ CONC NUM})]$

$(\uparrow\text{SUBJ CONC GEND}) =_c \text{FEM} \vee$

$[\text{female }((\uparrow\text{SUBJ})_\sigma) \wedge \neg(\uparrow\text{SUBJ CONC GEND})]$

N.B. i) subscript $_\sigma$: the semantic projection function

ii) subscript $_c$: the constraining equations, which check for the presence of the feature in the f-structure.

iii) 'aggregate': semantic cardinality is greater than one vs. 'non-aggregate': semantic singular or mass

These constraints explain what feature set of the controller the target aims at, and that the lack of a certain feature of the controller brings semantic agreement on targets. The verb *esat* checks the subject for the INDEX number feature, but the adjective *augstsirdīga* and the participle *strādājusi* check for the CONCORD number feature of their subjects. Thus, when their subject is the polite pronoun *Jūs* referring to a single addressee, the verb shows plural number agreement, whereas the others show singular number agreement by failing to find the CONCORD number of the pronoun.

Agreement with a pluralia tantum noun supports the idea that the pronoun *Jūs* lacks the CONCORD number feature in Latvian as well. Pluralia tantum nouns such as *sacīkstes* 'competition' trigger plural agreement on targets (Mathiassen 1997: 218):

(21) Sacīkstes   bija   interesantas.
     competition.PL be.3.PAST interesting.PL
     'The competition was | The competitions were interesting.'

The noun *sacīkstes* triggers plural number agreement regardless of its notional number. Although Latvian verbs in third person do not distinguish number, the predicate adjective must be in plural when agreeing with the pluralia tantum nouns. The noun *sacīkstes* possesses an identical feature specification in both CONCORD and INDEX number features, whose lexical entry can be specified as follows:

(22)   *sacīkstes* 'competition', N $(\uparrow\text{PRED})$ = 'competition'
                                        $(\uparrow\text{CONC NUM}) = \text{PL}$
                                        $(\uparrow\text{IND NUM})$ = PL

Accordingly, the syntactic agreement of predicates with this pluralia tantum noun *sacīkstes* in (21) is explained naturally. Since the plural adjective *interesantas* checks its subject for the plural number in CONCORD, it agrees with the CONCORD number of the noun *sacīkstes* regardless of its notional number.

Recall that Pollard and Sag's (1994) approach posits that predicate adjectives agree semantically with their controllers, as discussed in Section 2.1. This cannot explain Latvian agreement patterns as well since, as in French, predicate adjectives agree semantically with the polite pronoun *Jūs* as shown in (17), but syntactically with the pluralia tantum nouns as in (21) above. On the other hand, the challenge of

Kathol's (1999) analysis arose from the postulate that the polite pronoun's AGR number (which is equivalent to CONCORD in this paper) is plural, whereas its INDEX number feature depends on its notional number. As explained, this fails to explain why French affective adjectives aiming at the AGR number feature shows semantic agreement with the polite pronoun *vous*, shown in (9). In Latvian, attributive adjectives do not modify pronouns, so we cannot attest such cases. However, as Pollard and Sag (1994: 73) described, pronouns possess formal INDEX features, and anaphoric binding is INDEX agreement, not pure semantic agreement (e.g., *that dog is so ferocious... it even tried to bite itself / he even tried to bite himself / *it even tried to bite himself / *he even tried to bite itself*). Also, in the discourse context where we address a person, we cannot switch back and forth between the polite pronoun and the informal one. If the polite pronoun could have either singular or plural INDEX number, we cannot explain binding and the indexical property of pronouns. In an attempt to provide a unified analysis of agreement, I conclude that Latvian pronouns do possess formal INDEX features.

Summing up, different agreement patterns are brought from the different lexical specifications of agreement controllers and agreement targets. The polite pronoun *Jūs* lacks the number feature only in CONCORD, which is compared to the pluralia tantum nouns which possess the same plural number value in both CONCORD and INDEX. These different lexical properties of agreement controllers cause their targets to agree in different ways. The targets are distinguished by CONCORD or INDEX targets. They aim at different feature sets: adjectives check for CONCORD features, while verbs check for INDEX features. The targets default to semantic agreement reflecting the notional number of their controllers when the controllers lack the number feature that the targets check for. In this case, the targets contribute to the referential interpretation of the controllers. Again, the different agreement patterns are explained by the cooperative relationship between agreement controllers and targets.

In this section, I gave an analysis of predicate agreement patterns in Latvian, adopting the analysis of French mixed agreement shown in Wechsler and Hahm (to appear), which I described in Section 2.2. In both Latvian and French, the hybrid pronouns lack CONCORD features but possess INDEX features, and CONCORD targets show semantic agreement by the effect of the Agreement Marking Principle.

4. Case and Number features of Prepositional Objects in Latvian

This section discusses an interaction between prepositions and their arguments with respect to number features. Corbett (2005) discusses whether pronouns possess number features or not. His argument is that pronouns are suppletive (irregular in morphology) but they do possess number in the same way as regular common nouns do. He discusses Latvian data to support his idea. Latvian prepositions require a certain case feature for their objects, but it is only when their objects are in singular. When the prepositional objects are plural, they default to dative case, regardless of what case feature the preposition requires to their singular object (Veksler and Jurik 1978: 87, cited in Corbett 2005: 13):

(23) a. grūti dzīvot bez   draug-a
         hard to.live without friend-GEN.SG
         'It's hard to live without a friend.'

     b. grūti dzīvot bez   draug-iem
         hard to.live without friend-DAT.PL
         'It's hard to live without friends.'

(24) a. skorotāji runā par   grāmat-u
         teachers talk about book-ACC.SG
         'The teachers are talking about a book.'

     b. skorotāji runā par   grāmat-ām
         teachers talk about book-DAT.PL
         'The teachers are talking about books.'

Each preposition assigns a different case to its argument in singular. The preposition *bez* 'without' assigns genitive case and the preposition *par* 'about' assigns accusative case only to their singular objects, as in (23) and (24) respectively. However, the plural objects are all in dative case. He also gives examples with pronouns such as *ar mani* [1SG.ACC] 'with me' versus *ar mums* [1PL.DAT] 'with us'. Even when the prepositional object is a pronoun, still the same rule applies. When they are plural, they should be in dative case. I tested the number and case features when the prepositional complement is a second person pronoun:

(25) a. Runāju   ar   tevi.
         speak.PAST.1SG with you.ACC.SG
         'I spoke with you (one informal addressee).'

     b. Runāju   ar   Jums.
         speak.PAST.1SG with you.DAT.PL
         'I spoke with you (one formal addressee).'

     c. Runāju   ar   jums.
         speak.PAST.1SG with you.DAT.PL
         'I spoke with you (multiple addressees).'   (Hahm 2010)

The above sentences express that the preposition *ar* 'with' requires accusative case for the singular complements and again dative case to the plural ones. Note that the same ambiguous reading applies to the polite pronoun. The plural pronoun refers to either a polite addressee (b) or multiple addressees (c), whereas the singular pronoun refers to only a single informal addressee. Regardless of their meaning, their case features relate to the formal number feature, not their notional number.

In Section 3 earlier, I proposed that Latvian polite pronoun possesses INDEX features, but lacks CONCORD features. Both INDEX and CONCORD features are formal grammatical features. In Wechsler and Hahm's (to appear) approach with the Agreement Marking Principle, these two different sets of formal phi-features are able to explain the interaction between the case and number features of the

prepositional objects in Latvian. The case feature is a CONCORD feature (see Section 2.1). We can analyze the relation between prepositions and their objects with regard to case and number by positing that prepositions have control over their objects' INDEX number features as well as CONCORD case features. I posit that the preposition *ar*, for example, has a lexical specification like the following:[8]

(26) *ar*, P: [(↑OBJ CONC CASE) = ACC ∧ (↑OBJ IND NUM) = SG]
                ∨ [(↑OBJ CONC CASE) = DAT ∧ (↑OBJ IND NUM) = PL]

This lexical entry states that the argument of the preposition *ar* must be either accusative case and singular in INDEX or dative case and plural in INDEX. It is not possible for the prepositional objects to have plural number and non-dative case, since the case features would clash between dative case given by the prepositional head and non-dative case given by the nominal lexical entry. When the plural pronoun *Jums* is a prepositional object in (25), it must be in dative case, regardless of whether it refers to a single polite or more than one addressee, since it is the INDEX number feature that is controlled by its prepositional head. This is valid even when the prepositional object is a common noun since typical common nouns have an identical number feature in CONCORD and INDEX as proposed in Wechsler and Zlatić (2000; 2003). So far, we have seen that the second person polite pronoun in different cases can also get the same interpretation of politeness; and Latvian prepositions give a restriction on both grammatical phi-features to their arguments.

Corbett's idea that the pronouns possess number features is right in that they do have INDEX number features. At the same time, the number feature of the pronouns differs from those of common nouns in that typical common nouns get CONCORD number features as well.

5. Conclusion

This study analyzed predicate mixed agreement in Latvian. I examined the previous analyses of mixed agreement and showed their empirical problems in Section 2.1. In Section 2.2, I introduced the analysis of French mixed agreement given in Wechsler and Hahm (to appear). The Agreement Marking Principle was a crucial part of grammar of agreement that ensures the cooperative relation between agreement controllers and targets. According to the Agreement Marking Principle, the semantic agreement is expected when targets fail to check their controllers for a certain feature that they aim at.

Section 3 provided a formal analysis of the agreement patterns triggered by the hybrid pronoun *Jūs* [you.PL] 'one formal or more than one addressee' in Latvian. Mixed agreement in Latvian was explained by the result of the lack of the polite pronoun's CONCORD number feature, as opposed to its plural INDEX number feature, adopting the analysis of French mixed agreement in Wechsler and Hahm

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[8] Note that the preposition is neither an agreement controller nor target. The relation between the preposition and its object is the head-argument relationship. Thus, the control over both CONCORD and INDEX features of its argument is irrelevant to whether a lexical entity is a CONCORD or INDEX agreement target which aims one of the feature sets.

(to appear). Therefore, INDEX targets agree in plural but CONCORD targets agree semantically by failing to check their subject pronouns for the CONCORD number feature. On the other hand, pluralia tantum nouns trigger only syntactic agreement to CONCORD targets because these nouns possess plural number in both CONCORD and INDEX regardless of their notional number, and targets are able to check the certain features. In conclusion, the complicated agreement patterns are explained by three aspects: the type of controllers (i.e. what CONCORD and INDEX features the controllers possess), the type of targets (i.e. whether the targets are sensitive to CONCORD and INDEX features of their controllers), and the Agreement Marking Principle that controls the relation between the controllers and targets.

Section 4 considered the constraints on the prepositional arguments with respect to case and number features. Latvian prepositions require a certain case feature to their singular complements, whereas all plural prepositional objects possess dative case. I observed the data in which the polite pronoun serves as a prepositional object, and showed that the number feature of the prepositional object in question is not pure semantic number since the pronoun referring to one formal addressee is in plural number and dative case. I posited that prepositions have control over their objects' INDEX number features and CONCORD case features. The idea that the pronoun lacks the CONCORD number feature is still preserved. Since the pronoun *Jūs* possesses plural INDEX number which prepositions are sensitive to, it should be in dative case when functioning as a prepositional object.

This paper contributes to grammar of agreement in that it provides a formal and systematic analysis of Latvian predicate agreement patterns, which has not been done in the previous literature, and that it also analyzes the restriction between prepositions and their objects with regard to case and number features. Although many languages are analyzed with the Agreement Marking Principle in Hahm (2010) and Wechsler and Hahm (to appear), the further extensive research is necessary to examine whether this principle is valid to explain agreement patterns exhibited in all other natural languages.

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