HIERARCHIES AND COMPETING GENERALIZATIONS IN SERBO-CROATIAN HYBRID AGREEMENT

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Abstract

Within an approach in which agreement relations can target either the syntactic features or the semantic features of the agreement trigger, the goal of this paper is to explain the distribution of these two types of agreement relations in Serbo-Croatian, focusing on the cases in which the agreement trigger is a hybrid noun. Of particular interest are the situations in which a given word class (e.g. relative pronouns or personal pronouns) shows a split between the two types of agreement relations such that some forms of the paradigm present semantic agreement and others present syntactic agreement. We propose that the distribution of the two types of agreement relations is regulated by two generalizations. These generalizations create a conflict in some words, which we propose is resolved through the application of a principle stating that the more oblique a case form is, the likelier the form is to show semantic agreement.[*]

1 Introduction

Mixed, or hybrid, agreement is the phenomenon that arises when a noun triggers different agreement forms on its agreement targets depending on a number of syntactic and semantic factors. Usually, a competition arises in the specification of agreement features between the semantic properties and the syntactic features of the noun that governs agreement. We will refer to nouns that display the relevant syntax-semantics mismatches as hybrid nouns, of which there are several in Serbo-Croatian, the language that provides the data for the present analysis. This paper assumes the view of hybrid agreement proposed in Alsina and Arsenijević 2012 (A&A), according to which there is only one set of syntactic features relevant for agreement, in addition to the semantic properties. This is in contrast with the view of hybrid agreement in Wechsler and Zlatić 2000, 2003 (W&Z), which posits two sets of syntactic features (*concord* and *index*), besides the semantic features, in order to explain the facts of agreement.

A&A argue that, in hybrid agreement, the deciding factor in the choice between semantic and syntactic agreement is the grammatical category of the agreement target: adjectives, determiners, and adnominal modifiers show syntactic agreement with a hybrid noun; finite verbs show semantic agreement with a hybrid noun; however, pronouns (relative and personal pronouns) show a mixed pattern in which the choice between the two types of agreement depends on the case form of the pronoun. The goal of this paper is to describe this mixed pattern and to explain why it occurs the way it does, assuming only one set of syntactic agreement features, as in A&A.

The main claim of the paper is that there are two generalizations that determine whether a word class will show semantic or syntactic agreement and a principle that resolves those cases in which a conflict arises between

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the two generalizations. One generalization states that syntactic agreement is dependent on the presence of case morphology; the other generalization makes semantic agreement dependent on agreement with expressions with potentially marked person values. A conflict arises in forms that have both case morphology and agree with expressions with potentially marked person values: the conflict is resolved through the application of a principle stating that the more oblique a case form is, the likelier the form is to show semantic agreement.

No conflicts arise in finite verbs, which do not agree in case, or in attributive adjectives, which cannot agree with an expression bearing a marked person value. Most prominent among the forms in which this conflict occurs are pronouns, which are the word classes in Serbo-Croatian that show both case morphology and agreement with different person values. Different pronouns show a different cut-off point between semantic and syntactic agreement. Whereas personal pronouns can show semantic agreement in all case forms and syntactic agreement is only possible in nominative forms, as an alternative to the semantically agreeing form, non-restrictively used relative pronouns show syntactic agreement in all forms, while semantic agreement is fully grammatical only in the more oblique case forms, such as genitive, dative, and instrumental. What these different patterns have in common is that syntactic agreement is more likely to occur in the less oblique forms and semantic agreement in the more oblique forms.

In section 2, we compare the two views of hybrid agreement proposed in A&A and in W&Z and recapitulate the arguments in A&A in favor of having only one set of syntactic features for agreement. Within this approach, in section 3, we state the two generalizations governing the choice of semantic vs. syntactic agreement and show that a conflict arises between these two generalizations. In section 4, we propose a way to resolve this conflict and to explain the mixed pattern of semantic and syntactic agreement found in pronouns and, interestingly, in predicative adjectives. In section 5, we try to explain why there is a correlation between obliqueness of case forms and semantic vs. syntactic agreement. In section 6, we present a formalization of our proposal in LFG. And, finally, we present our conclusions.

2   Two views of agreement

The standard analysis of hybrid agreement has been to assume that linguistic expressions in an agreement relation are sensitive sometimes to the syntactic features such as gender and number of the agreement target (i.e. the noun or the noun phrase) and sometimes to the corresponding semantic properties. The assumption is that the syntactic agreement features of a nominal expression have a default semantic correlate; for example, the syntactic feature "singular" corresponds to an entity not composed of more than one unit of counting, where the unit of counting is given by the meaning of the noun, whereas the syntactic feature "plural" corresponds to an entity

composed of more than one such unit. In exceptional cases, this default correspondence is broken and we find nouns that, for example, are syntactically singular, but denote entities composed of more than one unit of counting. In Serbo-Croatian (S-C), there are such nouns and their syntax-semantics mismatches are visible in the forms that are selected in agreeing expressions in the sentence and discourse, as we see in (1):[1]

(1)   Starija   braća   su   puno   vikala.
           old.FSg brothers Aux.Pl much   shouted.NPl/FSg
           'Older brothers shouted a lot.'

The noun *braća* 'brothers' requires adnominal adjectives to be in the feminine singular form, but selects the plural form of the auxiliary and other finite verb forms.[2] The traditional view (e.g. Corbett 1979, 1983, 1991) assumes that the adnominal adjective *starija* agrees with the hybrid noun in the syntactic features of gender and number (as well as case), whereas the auxiliary agrees with it in the semantic feature of number (as well as person).

Contrasting with this traditional view, W&Z have proposed a different framework, in which there are two sets of syntactic features relevant to agreement, instead of one, in addition to the semantic features. These two sets are called *concord* and *index*. Concord is made up of three features: gender, number, and case. And index consists of the features gender, number, and person. There are, therefore, two different features of gender and number, given that concord gender is different from index gender and concord number is different from index number. While, as a default, concord gender and number have the same values as index gender and number, respectively, in marked situations, they have different values. This is what W&Z assume to be the case with hybrid nouns such as *braća*. This word would have the following specifications for the various manifestations of gender and number:

(2) *braća* 'brothers'
      CONCORD: [[NUMBER: Sg], [GENDER: F]]
      INDEX: [[NUMBER: Pl], [GENDER: N]]
      SEMANTICS: [[NUMBER: Pl], [GENDER: M]]

Assuming that adnominal adjectives agree with the head noun in concord features, this explains why the adjective *starija* in (1) is feminine singular: *braća* is feminine singular in concord. On the assumption that finite verb forms, such as auxiliaries, agree with their subject in index features, the

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[1] The following abbreviations are used: F (feminine), M (masculine), N (neuter), Sg (singular), and Pl (plural). And combinations of them: FSg (feminine singular), MPl (masculine plural), etc.

[2] The participial form *vikala* in (1) is potentially ambiguous between a neuter plural and a feminine singular form, as it is in the nominative case and in S-C there is a homonymy between neuter plural and feminine singular in all nominative case forms. The form by itself cannot tell us whether it is agreeing with a feminine singular expression or with a neuter plural one: it is only through an analysis that we can decide which of the two is right in (1). So, we will leave aside this form for the moment.

choice of the plural form *su* in (1) is explained: the noun phrase headed by *braća* is plural, as well as neuter, in index. The participial form *vikala* in (1), which could be analyzed as showing either concord agreement (hence, feminine singular) or index agreement (hence, neuter plural), is assumed in W&Z for theory-internal considerations to show index agreement and therefore to be neuter plural. As for the semantic features, they are assumed to be needed in W&Z for explaining the facts of pronominal coreference: a personal pronoun in the nominative form referring back to *braća* can be either *ona* or *oni* (see ex. (7a)), since a pronoun agrees with its antecedent either in index features or in semantic features. *Ona* is taken to agree in index features and thus to be neuter plural, although it is homophonous with the feminine singular form. The semantic features of *braća* are reflected in the agreeing pronoun *oni*, which is unambiguously masculine plural.

Although the W&Z framework is quite successful in providing an explanation for the complex facts of hybrid agreement in S-C, A&A argue against the idea that there are two sets of syntactic features for agreement, in addition to their semantic counterparts—the Dual Syntactic Agreement Hypothesis, or 2SAH. The main arguments against this hypothesis are the following:

1. A framework incorporating the 2SAH is much more complex than one that assumes only one set of syntactic agreement features. The latter, for a language like S-C, with two values for number (singular and plural) and three values for gender (feminine, masculine, and neuter), predicts the existence of six classes of words with different combinations of gender and number features. All of these classes have members in them. The 2SAH framework predicts the existence of thirty-six classes of words with different combinations of gender and number features (six combinations of concord gender and number features multiplied by six combinations of index gender and number features). Of these, according to W&Z, only eight have any members in them. Furthermore, once we remove those words whose index features can be derived from their semantic information (i.e. there is no mismatch between index and semantics), we are left with two words in S-C that have some feature mismatch for concord, index, and semantics: *braća*, as shown in (2), and *deca* 'children'. Thus, not only is the 2SAH considerably more complex than the alternative, but the added complexity is motivated by only two words.

2. The 2SAH does not simplify the explanation of the facts. The two words that motivate the 2SAH are claimed by W&Z to be feminine singular (FSg) in concord and neuter plural (NPl) in index. This claim rests on the language-particular syncretism of FSg and NPl in nominative forms. Within a framework with only one set of syntactic features of number and gender, the facts are explained by assuming that certain agreement phenomena are sensitive to the syntactic features (e.g. the head-modifier relation or the agreement of predicative adjectives) and certain others are sen-

sitive to the semantic features (e.g. finite verb agreement). Having the distinction between concord and index does not make the explanation of the facts any simpler.

3. An analysis within the 2SAH framework makes some incorrect predictions. A clear case of this is provided by (3) (from A&A):

(3) Pričamo o   deci.
     talk.1Pl about   children
     Ona   se   danas smatraju   gladnom   / *gladnim.
     they.NPl/FSg Refl today consider.Pl hungry.InstFSg hungry.InstPl
     'We're talking about children. They are considered hungry today.'

The pronoun *ona*, although lexically ambiguous between NPl and FSg, has to be NPl in (3) according to W&Z, because pronouns agree with their antecedents in index features and *deci*, like *braća*, is NPl in index. But then the prediction would be that the predicate adjective should agree with *ona* in the plural and yet that is not possible and the grammatical form is in the singular. For the analysis in A&A with a single set of syntactic features, this is expected: *ona* is FSg in (3), agreeing with *deci* in syntactic features, and therefore the predicate adjective is also expected to be FSg.

Within a framework that assumes only one set of syntactic features for agreement, A&A propose that agreement phenomena in S-C split between syntactic and semantic agreement as follows:

- Adnominal modifiers, predicative adjectives,[3] and participles agree in syntactic features; hence, are FSg when agreeing with a hybrid noun.
- Finite verb forms show semantic agreement with a subject headed by a hybrid noun; hence, are plural.
- Pronouns, both personal and relative, agree either semantically or syntactically (hence, are sometimes FSg and sometimes plural), although the choice depends on the case form.

3   Two generalizations governing the choice of agreement

In order to explain the fact that agreement targets in S-C sometimes show semantic agreement and sometimes syntactic agreement with their (hybrid agreement) triggers, we posit the following two generalizations:

(4) a. **Generalization 1**: words that inflect for case show syntactic agreement with their agreement triggers.

     b. **Generalization 2**: words that agree with expressions of different (i.e. marked) person values show semantic agreement with their agreement triggers.

The first consequence that follows from these generalizations is that adnominal words, whether adjectives, demonstratives, or other word classes,

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[3] In fact, predicative adjectives display a split behavior, as we shall see in section 4.

agree with the hybrid head noun in syntactic features, as shown in (1), repeated here as (5a), and in (5b):

(5) a. Starija braća su puno vikala.
      old.FSg brothers Aux.Pl much shouted.NPl/FSg
      'Older brothers shouted a lot.'

    b. Sreo sam stariju braću.
      met.MSg Aux.1Sg old.FSg.Acc brothers.Acc
      'I met the older brothers.'

There are two properties of adnominal words that explain this: first, they inflect for case, as we see with words such as *starija* and *stariju* in (5), which makes them subject to generalization 1; and, second, they are restricted to modifying third person expressions. An attempt to restrictively modify a first or second person pronoun results in an ill-formed expression, which slightly improves if the agreement trigger is reanalyzed as third person:

(6) Stariji ti ?je/??si zanimljiviji.
    old.CmprtMSg you Aux.3Sg/2Sg interesting.CmprtMSg
    ~'The older you is more interesting.'

Since adnominal words cannot agree with expressions of marked person values, they are not subject to generalization 2 and thus are not expected to show semantic agreement. Adnominal elements are thus correctly predicted to show syntactic agreement only.

The second consequence that follows from the generalizations in (4) concerns finite verbs.[4] Finite verbs agree with expressions of different person values, but do not inflect for case, which means they are subject to generalization 2, but not to generalization 1. Consequently, they show semantic agreement with the target, which is always the subject: as seen in (5a), the finite auxiliary chosen to agree with the NP headed by *braća* is the plural form *su*. While *braća* is syntactically feminine singular, it is semantically plural, as it denotes a group of individuals.

The third consequence concerns pronouns. Pronouns inflect for case. Therefore, by generalization 1, they should show syntactic agreement. Non-restrictively used relative pronouns and personal pronouns also agree with expressions of different person values (the latter even carry different person values). Therefore, by generalization 2, they should show semantic agree-ment. Since they are subject to both generalizations, a conflict arises when they agree with hybrid nouns. In such contexts, pronouns show a mixture of semantic and syntactic agreement, which is what this paper wants to explain.

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[4] When other triggers of mixed agreement enter the picture, such as pluralia tantum nouns and the honorific form *vi* 'you.Pl', generalization 2 may need to be modified along the following lines: words that agree with expressions with marked person values agree preferentially in the marked features of those expressions. And it does not matter whether it is a syntactic feature or a semantic feature: if it is marked (as in plural number or second person), the agreeing word picks this feature.

As for personal pronouns, in the nominative form they allow either syntactic or semantic agreement with their antecedent, as seen in (7a), whereas non-nominative forms of personal pronouns strongly favor semantic agreement with their antecedent, as in (7b).

(7)   Starija   braća$_i$ su   stroga.
        elder.FSg brothers   Aux.Pl strict.FSg/NPl
        'Older brothers are strict.'

   a.   Oni$_i$ / Ona$_i$ puno viču.
        pro.NomMPl   pro.NomFSg/NPl   much shout.Pl
        'They shout a lot.'

   b.   Njima$_i$ /??Njoj$_i$ se   puno viče.
        pro.DatPl   pro.DatFSg   SE   much shout.Sg
        'People shout a lot to them. '

As for relative pronouns of the *koji* series in their non-restrictive use, there is a contrast between oblique forms, as in (8a), and nominative and especially accusative forms, as in (8b): oblique forms such as instrumental allow either syntactic or semantic agreement with the head noun (hence the choice between FSg *kojom* and Pl *kojima* in (8a)); nominative and accusative forms only allow syntactic agreement, as we see with the accusative *koju* in (8b).

(8) a. moja   braća, sa <u>kojom</u>   /<u>kojima</u>   se   igram
        my.Fsg brothers with wh.InstFSg   wh.InstPl SE   play.1Sg
        'my brothers, with whom I play'

   b.   moja   braća, koju   /*koje   viđam   češće
        my.Fsg brothers wh.AccFSg   wh.AccPl see.1Sg   often.Comp
        'my brothers, whom I see more often'

An interesting fact about relative pronouns that follows from the present analysis is that the split we see between oblique and non-oblique forms of relative pronouns only occurs in non-restrictive clauses: in restrictive clauses, relative pronouns agree syntactically in all cases. Compare (8) with (9):

(9) a. deca   sa   <u>kojom</u>   /*<u>kojima</u>   se   igram
        children with wh.InstFSg   wh.InstPl SE   play
        'the children (that) I play with'

   b.   deca   koju   /*koje   viđam   češće
        children wh.AccFSg   wh.AccPl see.1Sg   often.Comp
        'the children that I see more often'

This is expected: relative pronouns in non-restrictive clauses, like personal pronouns, can take antecedents of any person value. Relative pronouns in restrictive clauses, like adnominal modifiers, only take 3rd person antecedents. Therefore, relative pronouns are subject to generalization 2 only in non-restrictive clauses and only in this case are they expected to agree

semantically. Relative pronouns in restrictive clauses are never expected to agree semantically.

To summarize, we find a split behavior in pronouns with respect to syntactic or semantic agreement. Personal pronouns agreeing with hybrid nouns of the *deca* type can be either plural or singular (i.e. both semantic and syntactic agreement are available) in the nominative form; in all other cases, they only take plural forms (i.e. enter semantic agreement), as shown in (7). Non-restrictively used relative pronouns agreeing with hybrid nouns appear only in feminine singular (i.e. only syntactic agreement is possible) in the nominative and accusative case; in all other cases, both options are available: singular and plural (i.e. allowing either semantic and syntactic agreement). The fact that pronouns are the word classes that show an alternation and a split between these two types of agreement is to be expected under the present analysis, as they are subject to both generalizations in (4). We still need to explain why pronouns split the way they do with respect to semantic and syntactic agreement.

4   Explaining the split

The facts of personal and relative pronouns with respect to whether semantic or syntactic agreement is available are explained by the following principle:

(10) **Semantic agreement and case obliqueness (SACO)**:
The more oblique a case form is in the obliqueness hierarchy (11), the likelier the form is to show semantic agreement.

(11) **Obliqueness hierarchy of case forms**:
nominative < accusative < oblique cases

The SACO correlates case obliqueness with semantic vs. syntactic agreement and its effects vary for each grammatical category that both has case and shows agreement (with expressions of different person values).

In personal pronouns, the split is between forms that allow both syntactic and semantic agreement and forms that only allow semantic agreement. The cut-off point is between nominative and accusative: any case form more oblique than nominative strongly favors semantic agreement. Since nominative forms are left out of this restriction, they are allowed to show either semantic or syntactic agreement. In example (7), for the pronoun that refers back to *braća*, there is a choice between the semantically agreeing *oni* and the syntactically agreeing *ona* in the nominative, but in the dative the FSg *njoj* is not allowed and only the Pl *njima* is possible.

In relative pronouns, the split is between forms that only allow syntactic agreement and forms that allow either syntactic or semantic agreement. The cut-off point is between accusative and oblique cases such as genitive or dative: the less oblique cases (i.e., nominative and accusative) are required to show syntactic agreement. This allows the oblique cases to show either syntactic or semantic agreement. This is consistent with the SACO, as

semantic agreement is only found in the more oblique case forms of the relative pronoun. As shown in (8), modifying *braća*, either the FSg *kojom* or the Pl form *kojima* is possible in the instrumental but only the FSg form *koju* is allowed in the accusative case.

An unexpected consequence of the SACO is that it explains a contrast found in predicative adjectives. Predicative adjectives occur in two constructions in S-C: as complements to copular and auxiliary verbs, where the adjective is in the nominative case, as in (12a), and as complements to semantically heavy verbs like *smatrati* 'consider', where the adjective is in the instrumental case, as in (12b). Whereas syntactic agreement is the preferred option in both constructions, semantic agreement is completely out in the nominative case, but only somewhat degraded in the instrumental case, as illustrated in (11).[5]

(12) a.   Gospoda   su   došla   / *došli.
         gentlemen-Nom are   come.Fsg   come.MPl
         'The gentlemen came.'

     b.   Gospodu   smatram   brzom   / ?brzim.
         gentlemen-Acc consider.1Sg fast.Fsg   fast.MPl
         'I consider gentlemen fast.'

The SACO predicts that, if one of the two predicative adjectives should allow semantic agreement, that would be the oblique case form. This is what we see here: although the semantically agreeing form is not perfect in either case, it is much better in the instrumental case than in the nominative case.

5   Implications of the proposal

A well-known alternative proposal to explain the distribution of syntactic and semantic agreement in different constructions across languages is found in Corbett's (1979, 1991, 2006) work. According to Corbett's hypothesis, the further right in the hierarchy in (13) an agreement target is, the likelier semantic agreement is to occur.

(13) **Corbett's hierarchy of agreement targets**:
     attributive < predicate < relative pronoun < personal pronoun

The claim is that semantic agreement should affect a continuous segment of the categories specified in the hierarchy in (13), so that, if, for example, relative pronouns in a particular language show semantic agreement, personal pronouns should also show semantic agreement. Or, if predicates show semantic agreement, so too should relative pronouns.

In the case of S-C, we find that both relative pronouns and personal pronouns show a mix of semantic and syntactic agreement that depends on the specific case form. In fact, as there are more case forms of personal

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[5] The hybrid noun used in (12) is *gospoda* 'gentlemen', which, like the other hybrid noun seen in this paper *braća*, is syntactically feminine singular and semantically masculine and plural.

pronouns than case forms of relative pronouns that show semantic agreement and fewer case forms of personal pronouns than of relative pronouns that show syntactic agreement, these facts are quite consistent with the predictions of Corbett's hypothesis. However, when we take predicates into consideration, it is not so clear that the facts are consistent with Corbett's predictions. It is reasonable to assume that finite verbs are predicates. However, since finite verbs consistently show semantic agreement with a subject headed by a hybrid noun, the expectation derived from Corbett's hypothesis is that relative pronouns and personal pronouns should also show consistent semantic agreement with a hybrid noun. That is not so. What we have seen is that relative and personal pronouns do not show consistent semantic agreement with a hybrid noun, but sometimes show syntactic agreement given the appropriate case form.

Our explanation based on two competing generalizations, (4), and a principle to solve the situations where conflict arises, (10), incorporating the case obliqueness hierarchy, does not have this problem:

- predicative adjectives, relative pronouns, and personal pronouns all show a split, with semantic agreement in some cases and syntactic agreement in others, as they are subject to both generalizations;
- finite verbs do not have case morphology and hence are not required to show syntactic agreement.

Moreover, we derive the facts of hybrid agreement from two more primitive properties: case marking and restriction to agreement triggers in third person. Case marking is fully dependent on the syntactic position of the agreement trigger (i.e. its grammatical function), and hence the agreeing item is pulled towards a general syntactic agreement. Case marking appears only if the agreeing item also has a nominal nature (in the sense in which nouns and adjectives are [+n]), which means that all the nominal features subject to agreement are available for syntactic agreement. (The nominal features are gender, number, and case.)

Syntactic expressions that agree with marked person values either agree with full fledged referential expressions, as is the case of finite verbs and predicative phrases, or are themselves referential expressions, as with personal pronouns. Items agreeing with full fledged referential expressions have access to the actual referents, and hence can establish semantic agreement (they may still have access to the syntactic features as well, thus having both options available).

As for the logic in principle (10), SACO, we have to bear in mind a distinction often made between two groups of case features: nominative and accusative are often referred to as the structural cases, while the other case features are labeled inherent. "Structural" refers here to the idea that the case feature is dependent on the grammatical function, and not on the semantic relation, while "inherent" reflects the idea that the case feature depends on the semantic relation of the syntactic expression. Given this, it makes sense

that structural cases show a stronger tendency towards syntactic agreement, while inherent cases, which are less dependent on syntactic relations, should leave their bearers more open for semantic agreement. Within the structural cases, it is reasonable to view nominative as less dependent on semantic role than accusative, as it is the subject case and the subject can correspond to any semantic role.

6 An LFG encoding of the proposal

At this point, one should ask how these ideas can be translated into the LFG framework, if at all. The generalizations in (4) and the principle (10) should not be seen as principles of a formal grammar, regardless of the framework adopted, but as principles that constrain a formal grammar. Let us consider several situations that are relevant for our analysis: (a) adjectival modification, (b) finite verb agreement, (c) personal pronouns, and (d) relative pronouns. The analysis that follows is sketchy, but—we hope—clear enough that it can be adapted to different versions of the framework.

One of the properties of adjectival modification in S-C is that the syntactic agreement features of the adjective have to be identical to those of the head noun that the adjective modifies. We can capture this idea by assuming that the features of case, gender and number of nominal expressions such as nouns and adjectives are grouped as the f-structure value of the feature AGR (for agreement) and that adjectival modification requires identification, or sharing, of the AGR of the NP with the AGR of the AP modifier. Thus, an AP daughter of NP is required to have the grammatical function MOD (for modifier, or ADJ) and is specified as sharing its AGR feature with that of the f-structure it is a feature of.[6] Let us assume that an adjective like *starija* and a noun like *braća* have the c- and f-structure information as part of their lexical entries in (14).[7] Notice that, at this point we are not concerned about the semantic information, which is where we would encode the idea that *braća* denotes a group of male individuals.

(14) a. starija: A_1 $\begin{bmatrix} \text{PRED} & \text{'old'} \\ \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Nom} \\ \text{GEND} & \text{F} \\ \text{NUM} & \text{Sg} \end{bmatrix} \end{bmatrix}_1$

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[6] There are different ways of representing Adj-Noun agreement in addition to the one presented here, as can be seen in Dalrymple, Dyvik, and King 2004, and any will work fine for our purposes as long as the features involved are f-structure features and not semantic features.
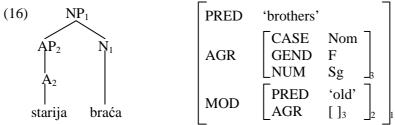[7] Coindexation signals correspondence between pieces of structure: in (14a) it indicates that the categorial information A corresponds to the f-structure with the same index.

b. braća: N_2

$$\begin{bmatrix} \text{PRED} & \text{'brothers'} \\ \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Nom} \\ \text{GEND} & \text{F} \\ \text{NUM} & \text{Sg} \end{bmatrix} \end{bmatrix}_2$$

The rule for modifier-head agreement would be stated as in (15):

(15) Modifier-head agreement:

$$\begin{bmatrix} \text{AGR} & [\ ]_1 \\ \text{MOD} & [\ \text{AGR} \quad [\ ]_1\ ] \end{bmatrix}$$

On the assumption that every f-structure is uniquely identified by its index, having two f-structures with the same index, as in (15), means that they are the same f-structure. So, (15) says that the agreement features of a modifier are the same as those of the structure in which it belongs. In this way, the NP *starija braća*, from (1), has the c-structure and f-structure shown in (16):

(16)

$$\begin{bmatrix} \text{PRED} & \text{'brothers'} \\ \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Nom} \\ \text{GEND} & \text{F} \\ \text{NUM} & \text{Sg} \end{bmatrix}_3 \\ \text{MOD} & \begin{bmatrix} \text{PRED} & \text{'old'} \\ \text{AGR} & [\ ]_3 \end{bmatrix}_2 \end{bmatrix}_1$$

Given that the agreement features that matter in this construction are the syntactic ones, it is irrelevant if the semantic features of the two words involved are not the same. If we should choose the form of the adjective with the features that correspond to masculine plural—*stariji*—the result would be ungrammatical (*stariji braća), even though the adjective and the noun would be in semantic agreement.

Finite verb agreement. As argued in A&A and as shown in examples like (1) and (5a), the finite verb form agrees in person and in semantic number with its subject. We can assume, as is standard practice in LFG to explain subject-verb agreement, that the lexical entry of a finite verb in S-C specifies certain features of its subject. What is special about S-C is that one of these features—the number feature—is not an f-structure feature, but an s-structure (or semantic structure) feature. For example, the auxiliary form *su*, as in the examples just cited, has the lexical specifications in (17). Here, to distinguish f-structure features from s-structure features, we prefix a feature structure belonging to f-structure with an "f" and a feature structure belonging to s-structure with an "s".

(17) su: I_1

$$_f\begin{bmatrix} \text{SUBJ} & [\text{PERS} \quad 3]_2 \\ \text{TENSE} & \text{pres} \end{bmatrix}_1$$

$$_s[\text{NUM} \quad \text{Pl}]_2$$

The f-structure information specified for the auxiliary *su* is compatible with the subject NP *starija braća*, whose f-structure is shown in (16). The number feature specified in the lexical entry (17) is an s-structure feature of the subject. Since the NP *starija braća* is semantically plural (i.e. it would have the s-structure feature [NUM Pl]), this NP can function as the subject of the auxiliary *su*, as seen in (1) and (5a).

Personal pronouns. The salient facts to explain are that accusative and oblique case forms of the personal pronoun agree with their antecedents in semantic features, whereas the nominative forms are free to agree either semantically or syntactically. One way to explain this observation is to assume that in accusative and oblique case forms, the semantic correlates of their syntactic agreement features are lexically specified, whereas they are only optionally specified for nominative forms. The dative plural *njima* and the dative FSg *njoj*, from (7b), would have the lexical information in (18), and the nominative forms *oni*, MPl, and *ona*, FSg, from (7a), would have the lexical entries in (19), where the parentheses around the semantic structures indicate that they are optional:

(18) a. njima: N_1

$$_f\begin{bmatrix} \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Dat} \\ \text{NUM} & \text{Pl} \end{bmatrix} \\ \text{PRED} & \text{'pro'} \end{bmatrix}_1$$

$$_s[\text{NUM} \quad \text{Pl}]_1$$

b. njoj: N_2

$$_f\begin{bmatrix} \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Dat} \\ \text{GEND} & \text{F} \\ \text{NUM} & \text{Sg} \end{bmatrix} \\ \text{PRED} & \text{'pro'} \end{bmatrix}_2$$

$$_s\begin{bmatrix} \text{NUM} & \text{Sg} \\ \text{GEND} & \text{F} \end{bmatrix}_2$$

(19) a. oni: N_3

$$_f\begin{bmatrix} \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Nom} \\ \text{GEND} & \text{M} \\ \text{NUM} & \text{Pl} \end{bmatrix} \\ \text{PRED} & \text{'pro'} \end{bmatrix}_3$$

$$\left(_s\begin{bmatrix} \text{NUM} & \text{Pl} \\ \text{GEND} & \text{M} \end{bmatrix}_3\right)$$

b. ona: N_4

$$_f\begin{bmatrix} \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Nom} \\ \text{GEND} & \text{F} \\ \text{NUM} & \text{Sg} \end{bmatrix} \\ \text{PRED} & \text{'pro'} \end{bmatrix}_4$$

$$\left(_s\begin{bmatrix} \text{NUM} & \text{Sg} \\ \text{GEND} & \text{F} \end{bmatrix}_4\right)$$

What we need to assume in order to explain the relevant facts is that the semantic agreement features of the pronoun must be shared with those of the antecedent; in the absence of relevant semantic features, syntactic features are shared. This explains why a dative pronoun referring to an NP headed by a hybrid noun like *braća* has to be the plural *njima* and cannot be the feminine singular *njoj*, as seen in (7b): the specified semantic features have to match those of the antecedent, which is plural. With a nominative pronoun, the option of having the semantic number and gender features specified explains the choice of pronoun in a case like (7a): if the semantic agreement features are specified, they must be shared with the antecedent and, therefore, with *braća* as the antecedent, the masculine plural pronoun *oni* is required; if those features are not specified, the syntactic gender and number features must be shared and then it is the feminine singular *ona* that is chosen.

Relative pronouns. The facts are that relative pronouns in the nominative and accusative cases must agree in syntactic features with the head noun, whereas oblique case relative pronouns (such as dative, genitive, or instrumental) in non-restrictive clauses can show either syntactic or semantic agreement. We can explain this by assuming that the non-oblique case forms only specify syntactic features, while the oblique case forms specify either the semantic features or the syntactic features of gender and number. So, whereas the accusative form *koju* has the lexical entry shown in (20a), the instrumental *kojima* has either of the entries in (20b,c):

(20) a.　koju:　　N_1　$_f\begin{bmatrix} \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Acc} \\ \text{NUM} & \text{Sg} \\ \text{GEND} & \text{F} \end{bmatrix} \\ \text{PRED} & \text{'relpro'} \end{bmatrix}_1$

　　 b.　kojima:　N_2　$_f\begin{bmatrix} \text{AGR} & \begin{bmatrix} \text{CASE} & \text{Inst} \\ \text{NUM} & \text{Pl} \end{bmatrix} \\ \text{PRED} & \text{'relpro'} \end{bmatrix}_2$

　　 c.　kojima:　N_3　$_f\begin{bmatrix} \text{AGR} & [\text{CASE} \quad \text{Inst}] \\ \text{PRED} & \text{'relpro'} \end{bmatrix}_3$

　　　　　　　　　　　　$_s[\text{NUM} \quad \text{Pl}]_3$

Assuming that a relative pronoun has to agree with its antecedent in all gender and number features, whether syntactic or semantic, we explain the facts illustrated in (8). The accusative, as well as the nominative, relative pronoun has its syntactic gender and number features specified, but not its semantic counterparts. Consequently, the accusative form *koju* is chosen when agreeing with the hybrid noun *braća*. The instrumental form *kojima* can be chosen when agreeing with the head noun *braća*, because both have semantic plural number. Alternatively, the instrumental form *kojom* can also

be chosen because it too has two lexical entries and in one of them it has the features of feminine gender and singular number as part of the f-structure, just like the agreeing head noun *braća*.

Although the grammar of S-C does not include the generalization in (4) or the principle in (10), it does comply with these principles. These principles are thus *metagrammatical principles*, which constrain how a grammar of a particular language can be.

7   Conclusions

In this paper we have argued that hybrid agreement in S-C is best explained by a theory in which linguistic expressions have two types of agreement features (only): one syntactic and one semantic. We have also proposed that whether an agreeing item will reflect the syntactic or the semantic features (yielding syntactic or semantic agreement) depends on two properties of the agreeing item: whether it is marked for case and whether it combines with agreement triggers of marked person values. These correlations are captured by the two generalizations in (4): items with case morphology tend to show syntactic agreement and items that agree with expressions of different person values tend to show semantic agreement. These generalizations impose conflicting requirements on forms that both have case morphology and agree with expressions of different person values. When such a conflict arises, a split emerges within the paradigm of the word classes affected: some case forms show syntactic agreement, some show semantic agreement, and some show either. Whether a case form behaves one way or another is not a completely random fact, but is constrained by principle (10), which correlates the likelihood of a form showing semantic agreement with its position in the case obliqueness hierarchy.

These principles can be compared to Corbett's (1979, 1991, 2006) explanation of how semantic and syntactic agreement is distributed across constructions in different languages. We show that some of the facts of hybrid agreement in S-C may constitute counterexamples to the predictions made by Corbett's explanation, whereas they are consistent with the proposal in this paper.

The status of these principles is similar to that of Corbett's explanation: they are not principles of the grammar of a natural language, but constraints on possible grammars. So, when the grammar of a language is formalized, there is no principle or constraint that can be identified with the principles in (4) or (10). Nevertheless, the grammar conforms to these principles.

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