

3/4 agreement patterns beyond hybrid nouns

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Abstract

This paper presents three novel case studies of 3/4 agreement patterns. The first two case studies involve Quantified NPs in English. I demonstrate that previous approaches to 3/4 agreements cannot account for these novel patterns. I propose a new analysis that relies on different classes of agreement targets agreeing at different times and couple this with a monotonicity condition on access to agreement features. This new analysis can account for the novel data presented here as well as the data from the literature. I extend this analysis to a third and final novel 3/4 pattern found with monstrous agreement in Telugu. This paper hence broadens both our empirical knowledge of 3/4 patterns as well as refines our theory of features and agreement that underlie such patterns.

Keywords: Agreement, Binding, Concord, Features, Monotonicity, Quantified NPs

1 Introduction

A number of typological and theoretical studies have shown that certain nouns that enter into agreement relationships have the ability to control two distinct agreement values on the elements showing the agreement (Corbett 1979, 2006; Landau 2016b; Pesetsky 2013; Smith 2015, 2017; Wechsler & Zlatić 2000, 2003). One value appears to reflect the morphosyntactic features of the noun, while the other agreement value appears to reflect the semantic features

of the noun. Take for example, the noun *vrač* ('doctor') in Russian in (1). In (1a) *vrač* enters into predicate argument agreement with the verb and the agreement on the verb is masculine matching the morphological features of the noun. In (1b), the verb that agrees with *vrač* shows feminine agreement indicating the referent of the noun is female, hence the agreement morphology appears to reflect the semantic features of the noun.

(1) *Russian* (Pesetsky 2013:36)

- a. *vrač-ъ* *prišël-ъ*
 doctor-NOM.SG arrived-M.SG
 'A doctor arrived.'
- b. *vrač-ъ* *prišël-a*
 doctor-NOM.SG arrived-F.SG
 'A doctor arrived.'

One of the more interesting and enlightening aspects of agreement with these so-called 'hybrid' nouns occurs when the noun controls agreement on two distinct agreement targets. Using again Russian *vrač* as an exemplar, observe the data in (2). Like in (1), *vrač* is undergoing predicate argument agreement with the verb, however, in this set of examples there is also an adjective that agrees with the noun. As seen in (2a), we see that both the verb and adjective can show masculine agreement. In (2b), we see that a mismatch is possible: the adjective can show masculine agreement and the verb show feminine. (2c) shows that the opposite mismatch where the adjective shows feminine agreement and the verb shows masculine agreement is not possible. Finally, (2c) shows that verb and adjective can both show feminine agreement.

(2) *Russian* (Pesetsky 2013:36)

- a. *Nov-yj* *vrač-ъ* *prišël-ъ*
 new-M.NOM.SG doctor-NOM.SG arrived-M.SG
 'A new doctor arrived.'

- b. Nov-yj vrač-ъ prišěl-a
 new-M.NOM.SG doctor-NOM.SG arrived-F.SG
 ‘A new doctor arrived.’
- c. *Nov-aja vrač-ъ prišěl-ъ
 new-F.NOM.SG doctor-NOM.SG arrived-M.SG
 ‘A new doctor arrived.’
- d. Nov-aja vrač-ъ prišěl-a
 new-F.NOM.SG doctor-NOM.SG arrived-F.SG
 ‘A new doctor arrived.’

As will be shown in the following sections of this paper, this 3/4 agreement pattern is a robust generalization that appears to cut across the features being agreed with as well as the type of target that is showing the agreement. The first part of this paper establishes two novel empirical 3/4 agreement patterns found with Quantified NP constructions (QNP) in English. I will first demonstrate, following work by Danon (2013), that QNP constructions and hybrid nouns like *vrač* form a natural class of nominals that display a mismatch between their semantic and morphological feature values. I will then demonstrate that none of the current proposals of how to capture 3/4 agreement patterns with hybrid nouns can account for the data presented here, hence the discovery of these patterns will lead to a rethinking of how to handle 3/4 patterns within the theory of agreement. Two popular assumptions within generative approaches to the 3/4 patterns are: (i) agreement happens as soon as a target is merged into the structure, thus elements that are merged in earlier, agree earlier and (ii) once semantic features enter the structure, access to morphological features for agreement is completely cut off. The data presented here lead to a rethinking of both these assumptions. First, the current proposal allows for some agreement targets, namely bound pronouns and anaphors, to agree later than when they first merge in line with recent work that treats such agreement as happening outside of the syntax proper. Second, I argue that there is limited access to morphological features even when semantic features are present in the structure. These modifications not only capture the novel patterns but the previous patterns from the literature as well. I conclude by showing how this system can be extended to a final novel

3/4 found with so-called monstrous agreement in Telugu.

This paper hence moves the discussion of agreement and features forward in three significant ways: first, it demonstrates that 3/4 patterns exist outside the narrow realm of hybrid nouns and that NPs with seemingly mismatching features are more common than previously thought. Importantly, the 3/4 patterns shown here do not arise from simple lexical items, but instead arise due to the syntactic context certain NPs find themselves in. Secondly, this paper shows that different agreement targets differ in when they agree: agreement probes on T and adjectives appear to agree as soon as they are merged, but pronominal and anaphor agreement appears to happen later in the derivation. Lastly, the analysis presented in this paper relies on the notion of monotonicity to account for 3/4 patterns. Monotonicity has been invoked to explain aspects of semantic agreement previously in Corbett’s (1979) classic paper on the agreement hierarchy. Corbett suggests that different agreement targets are arranged in the hierarchy given in (3). The likelihood that a target shows semantic agreement in a corpus increases monotonically from left to right.

- (3) Attributive < Predicate < Relative pronoun < Personal pronoun (Corbett 1979: 204)

I argue that a similar ordering regulates semantic agreement intersententially. I will show that the monotonicity approach developed here has superior empirical coverage to previous analyses of 3/4 patterns that try to derive them solely via syntactic locality conditions. This analysis fits into a broader program outlined in Graf (2019) which uses monotonicity as a tool to explain cross-linguistic morphosyntactic patterns.

1.1 The 3/4 agreement pattern

As mentioned in the introduction, the 3/4 agreement pattern with hybrid nouns is a general pattern that does not seem to be tied to certain types of agreement features or elements that undergoing agreement. So the same pattern we witnessed with *vrač* when it agrees with both

an adjective and a verb is replicated when the noun agrees with two adjectives (4). In (4a), lower adjective 'new' can show masculine while the higher adjective 'interesting' can show feminine agreement, but the opposite mismatch is impossible: the lower adjective cannot show feminine agreement while the higher adjective shows masculine agreement.

(4) *Russian* (Pesetsky 2013:38)

- a. ?U menja očen' interesn-aja nov-yj vrač-ъ
 by me very interesting-F.NOM.SG new-M.NOM.SG doctor-NOM.SG
 'I have a very interesting new (female) doctor.'
- b. *U menja očen' interesn-yj nov-aja vrač-ъ
 by me very interesting-M.NOM.SG new-F.NOM.SG doctor-NOM.SG
 'I have a very interesting new (female) doctor.'

Moving from gender features to number, we find the same pattern emerges again in Lebanese Arabic number agreement with NPs with numerals over ten. As noted in Ouwayda (2014) and discussed in Pesetsky (2013), Numerals over ten must merge with singular nouns as shown in (5a). These nouns can control either singular or plural agreement on the verb (5b).

(5) *Lebanese Arabic* (Pesetsky 2013:46)

- a. tleetiin walad / *wleed
 thirty child.SG / child.PL
 'thirty children'
- b. tleetiin walad daras-u / daras
 thirty child studied-PL / studied.SG
 'Thirty children studied.'

When an adjective that shows number concord with the noun is added to the structure we find the same pattern we observed with Russian gender agreement as seen in (6). (6a) shows that both agreement targets, the adjective *mnazzam* and the verb *daras*, can show singular agreement. (6b) shows that it is possible for the adjective to show singular agreement, but

the verb to show plural, while (6c) shows the opposite mismatch is yet again impossible. Finally, (6d) shows that both agreement targets can show plural agreement.

(6) *Lebanese Arabic* (Pesetsky 2013:47)

- a. tleetiin walad mnazzam daras
thirty child.SG organized.SG studied.SG
'Thirty organized children studied.'
- b. tleetiin walad mnazzam daras-u
thirty child.SG organized.SG studied-PL
'Thirty organized children studied.'
- c. *tleetiin walad mnazzam-iin daras
thirty child.SG organized-PL studied.SG
'Thirty organized children studied.'
- d. tleetiin walad mnazzam-iin daras-u
thirty child.SG organized-PL studied.PL
'Thirty organized children studied.'

With two agreeing adjectives, we once again see that only one of the two possible mismatches is possible: the lower adjective can show singular agreement and the higher adjective can show plural (7a), but the opposite pattern where the lower adjective shows plural agreement and the higher adjective shows singular agreement is ungrammatical (7b).

(7) *Lebanese Arabic* (Pesetsky 2013:47)

- a. tleetiin walad kesleen mnazzam-iin
thirty child.SG lazy.SG organized-PL
'Thirty organized lazy children.'
- b. tleetiin walad kesleen-iin mnazzam
thirty child.SG lazy-PL organized.SG
'Thirty organized lazy children.'

Staying in the realm of number, Landau (2016b) notes a similar pattern for the Hebrew noun *be'alim* 'owners/husbands'. In this case, *be'alim* is always morphologically plural, however it has the ability to show singular agreement when it refers to a singular entity. Once again, if

we have two agreement targets, an adjective and a verb, the 3/4 pattern rears its head. (8a-b) shows that both agreement targets can match in either the singular or plural respectively. (8c) shows that it is impossible for the adjective to show singular agreement and the verb to show plural. The other mismatch as shown in (8d) is possible.

(8) *Hebrew* (Landau 2016:984-985)

- a. ha-be'al-im ha-kodem maxar et ha-makom lifney šana
the-owner-PL the-previous.SG sold.3SG ACC the-place before year
'The previous owner sold the place a year ago.'
- b. ha-be'al-im ha-kodem-im maxru et ha-makom lifney šana
the-owner-PL the-previous-PL sold.3PL ACC the-place before year
'The previous owners sold the place a year ago.'
- c. *ha-be'al-im ha-kodem maxru et ha-makom lifney šana
the-owner-PL the-previous.SG sold.3PL ACC the-place before year
Intended: 'The previous owner(s) sold the place a year ago.'
- d. ?ha-be'al-im ha-kodem-im maxar et ha-makom lifney šana
the-owner-PL the-previous-PL sold.3SG ACC the-place before year
'The previous owner sold the place a year ago.'

Looking at other structures that involve different agreement targets than just an adjective and verb shows the same pattern. As is well known, *committee*-like nouns can control singular or plural agreement in British (and many other) dialects of English. Smith (2017) presents a novel type of 3/4 pattern with these nouns. This time instead of looking at a DP-internal element like an adjective that is an agreement target, Smith, uses the verb and a bound reflexive pronoun that must match its antecedent in ϕ -features. Despite this difference with the other languages and patterns discussed before, we strikingly find the same pattern, as shown in (9). (9a-b) show that both the verbal agreement and the features of the reflexive can be either be both singular or plural respectively. (9c) shows the one mismatch that is allowed: the verbal agreement can be singular and the reflexive plural. The opposite pattern again is not possible (9d).

(9) *British English* (Smith 2017:2)

- a. The government has offered itself up for criticism.
- b. The government have offered themselves up for criticism.
- c. The government has offered themselves/each other up for criticism.
- d. *The government have offered itself up for criticism.

The final case study from the literature we will examine looks at the agreement possibility with so-called ‘imposters’ in Icelandic (Wood & Sigurdsson 2014). Imposters are third person DPs that nevertheless refer to the speaker or hearer of an utterance (see Collins & Postal 2012 for extensive discussion of imposters) . In Icelandic, the imposter *undirritaðan* ‘underwritten’ has the ability to control either third person plural agreement or first person plural agreement. It also has the ability to co-refer with a third person plural or a first person plural pronoun. When again these two agreement targets are within the same structure, we see the same 3/4 interaction. Either both can be third person (10b), both can be first person (10c) or the the verb can be third person and pronoun first person (10a). As shown in (10d), the opposite agreement alignment where the verb shows first person agreement and the pronoun is third person is ungrammatical on the co-referent interpretation of the pronoun and *undirritaðan*.

(10) *Icelandic* (Wood & Sigurdsson 2014:216)

- a. undirritaðan_i hafa aður satað að við_i munum eeki styðja
undersigned.m.pl have.3.pl before said that we will not support
skattahækkanir
tax.hikes
‘The undersigned have said before they will not support tax hikes.’
- b. undirritaðan_i hafa aður satað að þeir_i muni eeki styðja
undersigned.m.pl have.3.pl before said that they will not support
skattahækkanir
tax.hikes
‘The undersigned have said before they will not support tax hikes.’

- c. undirritaðan_i höfum aður satað að við_i munum eeki styðja
undersigned.m.pl have.1.pl before said that we will not support
skattahækkanir
tax.hikes
‘The undersigned have said before they will not support tax hikes.’
- d. *undirritaðan_i höfum aður satað að þeir_i muni eeki styðja
undersigned.m.pl have.1.pl before said that they will not support
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Before moving on to the next section that introduces a novel 3/4 pattern involving agreement and binding with quantified NPs in English, let’s summarize the empirical findings laid out here. 3/4 patterns occur across all the ϕ -features: person (Icelandic), number (British English, Hebrew, Lebanese Arabic) and gender (Russian). The pattern also occurs and interacts with a number of different agreement targets: a DP-internal element and predicate argument agreement, two DP-internal modifiers, predicate argument agreement and a locally bound reflexive as well as predicate argument agreement non-local co-referent pronouns. Finally and perhaps most importantly, the direction of the pattern is always the same: it is possible for the closer agreement target to show agreement with morphological features and the further agreement target to show agreement with semantic features. The opposite is never possible.

2 QNPs and hybrid agreement

In this section, I present, to my knowledge, two novel 3/4 agreement patterns involving English Quantified NPs (QNPs). It has been noted in previous literature that quantifier NPs cross-linguistically can agree in at least three different ways: the quantifier can control agreement, the N can appear to control agreement or a default agreement is used (Danon 2013). We see such variation with English quantifier partitive constructions, as well, as noted by Zanuttini et al. (2012) with examples below in (11). As seen in (11), a QNP like

everyone of us/you can control either singular agreement with the quantifier *everyone* or plural agreement with the head noun *us/you*.¹

- (11) a. Everyone of us think(s) that the war in Iraq is wrong.
b. Everyone of you know(s) this article is true. (Zanuttini et al. 2012:1247)

The same is true for other QNPs, as well, such as *each (one) of us*. This is shown in (12) where once again either singular or plural agreement is possible.²

- (12) Each (one) of us is/are happy.

Like other quantified phrases, quantifier partitives can also bind pronouns, giving rise to the bound variable reading. In the case of a QNP like *each of us*, we find it can bind a third person singular pronoun or a first person plural pronoun (a so-called dependent plural Sauerland (2003); Heim (2008); Sudo (2014)) as shown in (13).

- (13) a. Each of us_i did his_i best.
b. Each of us_i did our_i best.

¹Note that these cannot be explained in terms of the psycholinguistic phenomena of agreement attraction (Brock & Miller 1991 *et seq.*). An example of this phenomena is given in (i). Attraction occurs when a NP in a non-agreement controlling position can appear to agree with the verb.

- (i) The key to the cabinets are here.

One of the findings in the attraction literature is that in order for a element to show attraction effects, it must occur in (or be syncretic with) the morphological case that is associated with agreement controlling position (i.e., nominative in English) (see e.g., Bhatia 2019, to appear and references). In the examples used here, the pronoun can be the accusative *us*, hence ruling out the possibility that this is an agreement attraction effect.

²As the case with other languages, not every QNP has the ability to control two distinct agreement types. For example, *some of us* in (i) can only agree in plural and not singular.

- (i) Some of us *is/are happy

Danon (2013) and Wechsler & Zlatić (2003) suggest that only quantifiers that show ϕ -features themselves can control two distinct agreements. This appears partially true for English, in which QNPs with *one* appear to control agreement more easily. The example in (12), however shows that *one* is optional when controlling either agreement value. It is possible that in such structures a null *one* is present, just left unpronounced.

In a construction where a QNP simultaneously controls agreement and binds a pronoun, we find our familiar 3/4 pattern. It is possible to have the verbal agreement be third person singular and the bound variable pronoun first person plural (14a). It is also possible for the both the agreement and the bound variable pronoun to be third person singular (14b). (14c) shows it is also possible to have the verbal agreement be plural and the bound variable pronoun be 1st person plural. The last logical possibility where the verbal agreement is plural but pronoun is 3rd person singular is not possible on the bound variable interpretation (14d).

- (14) a. Each of us_i thinks we_i are the richest linguist.
 b. Each of us_i thinks he_i is the richest linguist.
 c. Each of us_i think we_i are the richest linguist.
 d. #Each of us_i think he_i is the richest linguist.

Some speakers find (14a) to be slightly less acceptable than (14b-c), yet much better than (14d), which for all speakers consulted was unacceptable on the bound pronoun reading. It should be noted however that naturally occurring examples like (14a) can be found. A small collection is presented below in (15), but many more can be culled from a quick google search.

- (15) a. Each of us thinks that our own mistake is the worst [...]³
 b. [...] each of us thinks our role is the lead.⁴
 c. Each of us thinks we are the most important person [...]⁵

This is general pattern that occurs with long distance bound pronouns, but also locally bound pronouns and reflexives. This is shown in (16) for a locally bound possessive pronoun and in (17) for a locally bound reflexive.

³*The Seven Sisters* by Lucinda Riley

⁴*Invisible Monsters* by Chuck Palahniuk

⁵*Imhotep* by Jerry Dubs

- (16) a. Each of us_i is doing his_I best.
 b. Each of us_i are doing our_i best.
 c. Each of us_i is doing our_i best.
 d. #Each of us are doing his_i best.
- (17) a. Each of us_i lies to himself_i.
 b. Each of us_i lie to ourselves_i.
 c. Each of us_i lies to ourselves_i.
 d. *Each of us_i lie to himself_i.

Moving on to the second 3/4 pattern, we also can find a 3/4 pattern with QNPs in binominal small clauses and copular constructions. In binominal small clauses/copular constructions, we see number matching between the two DPs as shown in (18) (Bejar et al. 2019).

- (18) a. I consider Mary a violinist.
 b. I consider Mary and Jane violinists.
- (19) a. *I consider Mary violinists.
 b. *I consider Mary and Jane a violinist.

Bejar et al. (2019) treat such matching in examples like (18) as the result of an AGREE like mechanism which they call MERGE CONCORD. While going into their arguments for this mechanism will take us too afield of our present discussion, I for now will just assume that number matching the in cases like (18) are in fact due to a syntactic agreement like mechanism.⁶ Interestingly, Bejar et al. (2019) discuss cases where the first DP in copular

⁶An important caveat for this analysis is that it only assumes merge concord for a subset of copular constructions. Bejar et al. assume that feature matching is enforced via merge concord in predicational copular clauses, but not however in equative copular clauses, where the DP occurring after the copular is referential. They use this split to explain why number matching is not strictly enforced in equative clauses, as shown below.

- (i) a. The nose is the kiwi/kiwis.
 b. The nostrils are the grape/grapes (Bejar et al. 2019: (4))

constructions is a QNP, as shown in (20).

- (20) a. Each of the three boys is a dancer.
b. *Each of the three boys is dancers. (Bejar et al. 2019: (9))

They also note that for some speakers allow for *each of the three boys* to control plural agreement on the copular verb, as we have seen in the discussion above. When this happens, the predicate DP can surface as either singular or plural as shown in (21).

- (21) a. Each of the three boys are dancers.
b. ?Each of the three boys are a dancer. (Bejar et al. 2019: footnote 7)

Although not noticed by Bejar et al. (2019), the combination of these two observations gives us yet another 3/4 agreement pattern with QNPs.

- (22) a. Each of the three boys is a dancer.
b. Each of the three boys are dancers.
c. ?Each of the three boys are a dancer.
d. *Each of the three boys is dancers.

Comparison to our previous 3/4 pattern with QNPs involving bound pronouns, reveals a difference between the two patterns. The relevant example is repeated below.

- (23) a. Each of us_i thinks he_i is the richest linguist.
b. Each of us_i think we_i are the richest linguist.
c. Each of us_i thinks we_i are the richest linguist.
d. #Each of us_i think he_i is the richest linguist.

Let us focus on the two mismatch cases of (22c-d) and (23c-d). The acceptable case in (22c)

involves the verbal agreement showing plural agreement while the predicate DP is singular. The acceptable case in (23a), on the other hand has the verbal agreement surface as singular and the the bound pronoun is plural. Schematically let us represent the structures as in (24).

- (24) a. [QNP [Target-1:[SG] [... Target-2:[PL] ...]]]
 b. [QNP [Target-1:[PL] [... Target-2:[SG] ...]]]

In both 3/4 patterns, agreement Target-1 is verbal agreement presumably with a T head, Target-2, however, differs between the examples: in (22) it is a predicate DP, but in (23), it is a bound pronoun. If Target-2 is predicate DP as in (22), the schema in (24b) is acceptable, while the schema in (24a) is unacceptable. If Target-2 is a bound pronoun, then the judgments flip: (24a) is acceptable and (24b) is unacceptable.

To summarize this section, I have presented two novel 3/4 agreement patterns involving QNPs. The first case involved a QNP controlling verbal agreement while simultaneously binding a pronoun. The second case involved the QNP once again controlling verbal agreement but this time undergoing number matching with a predicate DP. It was also shown that while both instance display a 3/4 pattern, the type of element that acts as the second agreement Target flips which of the two mismatch cases is acceptable. If Target-2 is a predicate DP, then the agreement pattern schematized in (24b) is possible, but if Target-2 is a bound pronoun, then the agreement pattern schematized in (24a) is possible. The discovery of these two patterns leads to two separate questions: (i) What is the common characteristic of QNPs and hybrid nouns that allows them to both give rise to this distinctive agreement pattern and (ii) how do we account for the agreement flip we see when the element that acts Target-2 differs. The next two sections of the paper will put forth analyses that answers these two questions.

3 Quantifier Partitives and hybrid nouns

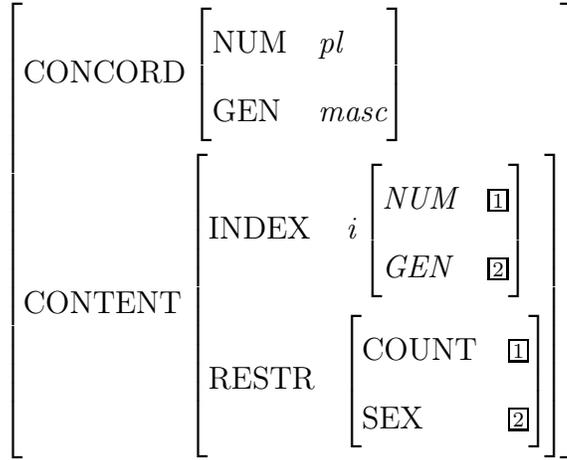
A question that arises is what do quantifier partitives and hybrid nouns have in common that they both show this distinctive 3/4 agreement pattern? The answer to this question appears to be that both of this types of DPs constitute a mismatch between the morphological features of the DP and the semantic features of the DP. For instance in the theory of agreement put forth in Wechsler and Zlatić (2000,2003), they assume that nouns come with both *index* and *concord* features. These features typically match one another, but the system does allow for mismatches. Take for example their discussion of *deca* ('children') from Bosnian/Serbian/Croatian (BSC). As shown in (25) *deca* has the ability to control both feminine singular agreement on the adjective and demonstrative and third person plural neuter agreement on the auxiliary and verb. In the Wechsler and Zlatić system, this is analyzed as the noun having feminine singular concord features, but neuter plural index features (26).

(25) Ta dobra deca su došla
that.F.SG good.F.SG children AUX.3PL come-PPRT.N.PL
'Those good children came.'

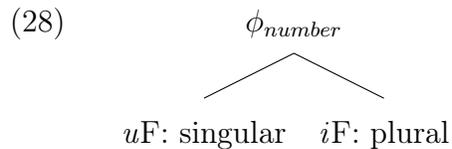
(26) $\left[\begin{array}{ll} \text{CONCORD} & \textit{fem.sg} \\ \text{INDEX} & \textit{nt.pl} \end{array} \right]$

Landau (2016) entertains a similar analysis for the analysis of *be'alim*. Recall from the previous section that *be'alim* is morphologically plural but can control singular agreement when it refers to singular referent. Landau proposes that the concord features of the noun are set as plural, but the index features depend on the referential restriction (so singular with a singular referent, and plural with a plural referent), as shown in (27).

(27) Lexical entry for *be'alim* (HPSG style)



A similar intuition is explored in the works of Smith (2015, 2017). Using more minimalist terminology, Smith proposes that nouns come with both interpretable features that interface with semantics (similar to index features) and uninterpretable features that interface with the morphology (similar to concord features). In his discussion of the noun *committee*, he puts forth the idea that the interpretable features of the noun are plural but the uninterpretable features of the noun are singular (28).

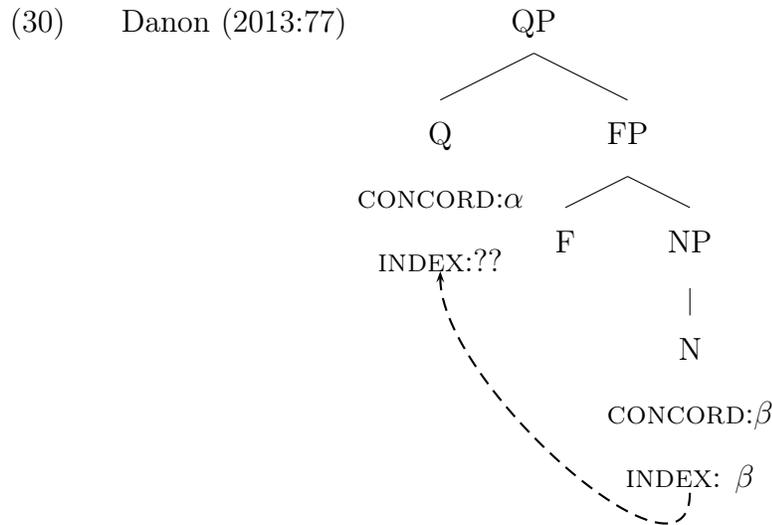


So it appears that a defining characteristic of hybrid nouns, despite superficial differences in analyses, is that they display a mismatch between the morphological and semantic features. Lets now turn to QNPs. In a paper on agreement with quantified noun phrases in Hebrew and cross-linguistically, Danon (2013) comes to a remarkably similar conclusion about such DPs that the researchers cited above come to regarding hybrid nouns: certain quantified DPs also exhibit a mismatch between their morphological and semantic features. Danon’s main empirical domain is Quantifier constructions in Hebrew. He notes that for some quantifier constructions it appears that either the quantifier or the apparent noun complement can control agreement on the verb as shown in (29). In (29), it possible that the verb either

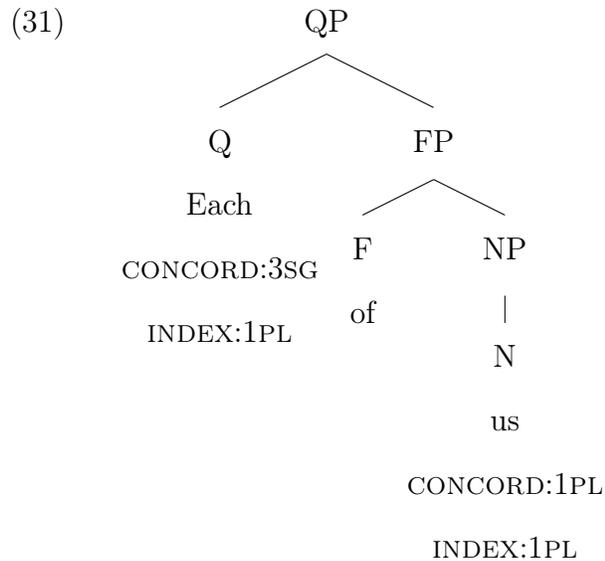
shows feminine singular agreement, apparently agreeing with the noun *maskoret* ('salary'), or the verb can show masculine plural agreement resulting from agreement with the quantifier *30 axuz-im* (30%) (Danon 2013:56).

- (29) 30 axuz-im me-ha-maskoret holxim / holexet le-sxar dira
 30 percent-M.PL of-DEF-salary.F.SG goes.M.PL / ?goes.F.SG to-rent
 '30% of salary goes to (paying the) rent.'

To account for this behavior, Danon once again relies on the index/concord distinction. He argues that both the noun and the quantifier have both sets of features. In some cases the index feature of quantifier can be unvalued and instead pick up a value via feature percolation with the index feature of the noun. This is schematized in (30).



In such cases, assuming that features of the noun and the Q are distinct, this once again results in a mismatch between the concord and index features that we saw previously for hybrid nouns. Using the example of *each of us* from the last section, this analysis would lead to the following structure after feature percolation where the concord features of the QNP would be third person singular, but the index features would be first person plural shown in (31).



Danon’s analysis of QNP features, hence allows for QNPs and hybrid nouns to form a natural class of DPs that display a mismatch between their index and concord features. The novel observation that QNPs in addition to hybrid nouns display 3/4 agreement patterns lend further support for such a unification. The postulation of the feature mismatches, however, is not enough to account for the 3/4 agreement pattern. Further restrictions on access to these features are needed. Such restrictions are explored in the next section.

4 An account of the 3/4 pattern with QNPs

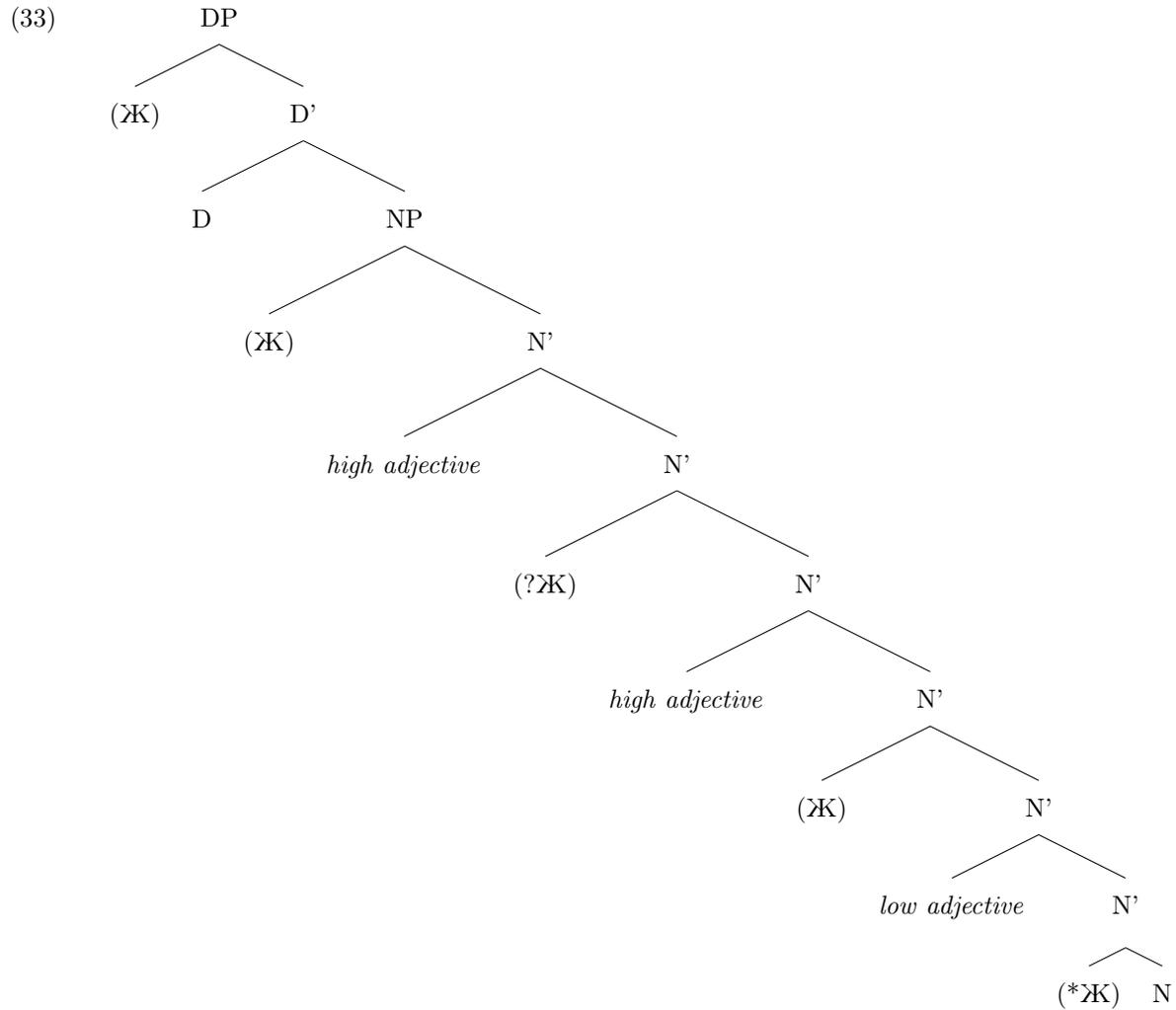
In this section, I will present an account of 3/4 agreement pattern with QNPs. The account will incorporate insights regarding the index/concord distinction of QNPs from Danon (2013) discussed in the previous section plus additional insights from previous accounts of 3/4 patterns that I will detail below. The goal of this section is to account for the 3/4 pattern with QNPs using the same mechanisms that underly the pattern with hybrid nouns, giving a unified explanation for the two.

4.1 Previous analyses of 3/4 patterns

In the previous section, it was shown that both hybrid nouns and QNPs can be analyzed as DPs where the semantic features of the DP mismatch from the morphological features of the DP. Many analysis of 3/4 agreement with hybrid nouns have attempted to account for the pattern by proposing that those two types of features enter the syntactic derivation at different times. Take for example Pesetsky (2013)'s analysis of Russian. Recall that in Russian, a noun like *vrač* can control feminine or masculine agreement on both adjectives and verbs, however if the adjective shows feminine agreement then the verb must also show feminine agreement (shown again in (32)).

- (32) a. Nov-yj vrač-ъ prišël-ъ
 new-M.NOM.SG doctor-NOM.SG arrived-M.SG
 ‘New doctor arrived.’
- b. Nov-yj vrač-ъ prišël-a
 new-M.NOM.SG doctor-NOM.SG arrived-F.SG
 ‘New doctor arrived.’
- c. *Nov-aja vrač-ъ prišël-ъ
 new-F.NOM.SG doctor-NOM.SG arrived-M.SG
 ‘New doctor arrived.’
- d. Nov-aja vrač-ъ prišël-a
 new-F.NOM.SG doctor-NOM.SG arrived-F.SG
 ‘New doctor arrived.’

To account for this, Pesetsky proposes that there is a feminizing head \mathcal{K} that can optionally merge into multiple places within the nominal spine as shown in (33). \mathcal{K} is analyzed as the element that carries the semantic feminine features while the noun itself is the source of the morphological masculine features. Once \mathcal{K} has entered the structure, all agreeing elements merged later must agree with it due to minimality/locality (Pesetsky 2013:40).



This accounts for the pattern in (32). In (32a), $\mathcal{X}\mathcal{K}$ is never merged into the structure and hence both agreeing elements can agree with the head noun and be valued masculine. In (32d), $\mathcal{X}\mathcal{K}$ is merged into the structure below the adjective, hence when the adjective probes for an agreement target it will be valued by $\mathcal{X}\mathcal{K}$ resulting in feminine agreement, the same happens when T probes, it will be valued by $\mathcal{X}\mathcal{K}$ and show feminine agreement. In (32b), the adjective is merged before $\mathcal{X}\mathcal{K}$ enters the derivation and probes and agrees with the head noun resulting in masculine agreement. $\mathcal{X}\mathcal{K}$ is then merged into the derivation, hence when T probes it agrees with it and is valued feminine. (32c) is ruled out because for the adjective to be valued feminine, $\mathcal{X}\mathcal{K}$ must have been merged into the derivation before it. As the adjective is merged within the DP before T is merged into the clausal spine, this entails that $\mathcal{X}\mathcal{K}$ must

have merged before T. In order for T to show masculine agreement then it must have agreed with the head noun across \mathcal{K} , however such a derivation would be ruled out due to a locality violation.

Recall that when two agreeing adjectives are present we once again allow for only one of two possible mismatches (example repeated below in (34)).

- (34) a. ?U menja očēn' interesn-aja nov-yj vrač-ъ
 by me very interesting-F.NOM.SG new-M.NOM.SG doctor-NOM.SG
 'I have a very interesting new (female) doctor.'
- b. *U menja očēn' interesn-yj nov-aja vrač-ъ
 by me very interesting-M.NOM.SG new-F.NOM.SG doctor-NOM.SG
 'I have a very interesting new (female) doctor.'

The analysis also accounts for the pattern here. In (34a) the adjective *nov-yj* is merged before \mathcal{K} and agrees with the noun. \mathcal{K} is then merged, and acts as the controller of agreement on the adjective *interesn-aja*. (34b) is once again ruled out because the presence of feminine agreement on the lower adjective *nov-aja* entails that \mathcal{K} was merged before it, thus \mathcal{K} was also merged before *interesn-yj* and the masculine agreement would once again be ruled out via locality.

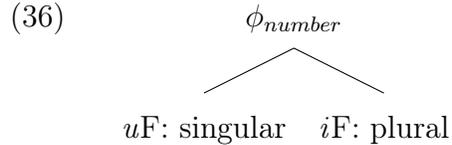
As we have just seen, Pesetsky's analysis is well equipped to account for 3/4 agreement patterns when the agreeing elements are either both internal to the DP (34) or one is internal to the DP and the other external (32). However, as noted by Smith (2017), this type of analysis does not straightforwardly account for 3/4 patterns that arise when both agreeing elements occur outside the DP, as exemplified by the British English pattern with *committee* nouns. In this pattern (repeated in (35)), the two agreeing elements are both external: a locally bound reflexive pronoun/reciprocal and an auxiliary (i.e. T).

- (35) a. The government has offered itself up for criticism.
 b. The government have offered themselves up for criticism.
 c. The government has offered themselves/each other up for criticism.

- d. *The government have offered itself up for criticism.

Allowing for multiple merge positions within the DP for the semantic feature does not help here as regardless of where the feature is merged in the nominal spine it will still be merged prior to being agreed with by both the reflexive and the auxiliary.

Taking the data in (35), as a starting point, Smith proposes a competing analysis of 3/4 agreement patterns. As noted in the previous section, he assumes that all nouns come with two sets of features: interpretable features *i*Fs (similar to index features) and uninterpretable features *u*Fs (similar to concord features).



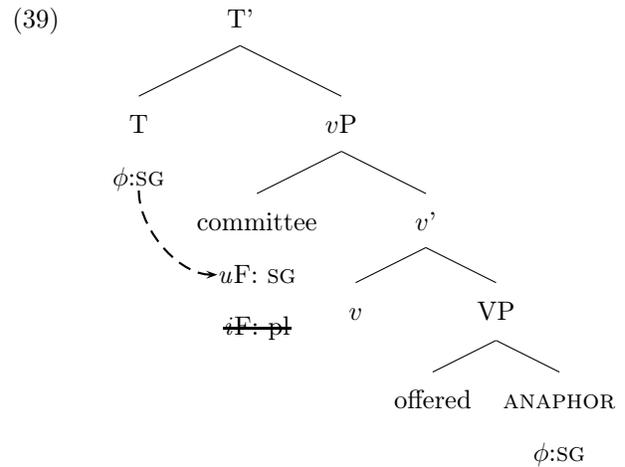
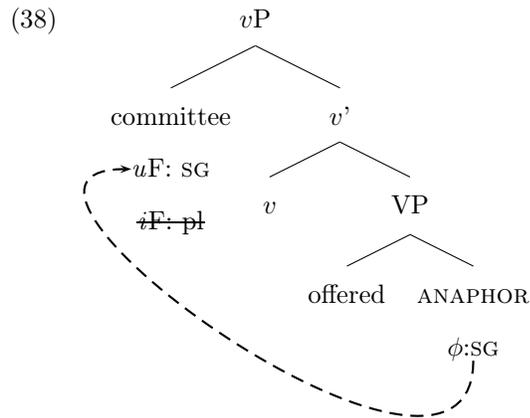
He further assumes that feature matching between an anaphor and its antecedent is the result of an agreement like mechanism directly between the anaphor and the antecedent (Hicks 2009; Wurmbrand 2017). Agreement on T is thought to be the result of the operation AGREE, as is standardly assumed (Chomsky 2000, 2001). A crucial assumption to Smith's analysis is that *i*Fs and *u*Fs are not uniformly available throughout the derivation. He restricts access to *u*Fs via the rule in (37).

- (37) An active *i*Fs cannot be ignored by agreement operations.

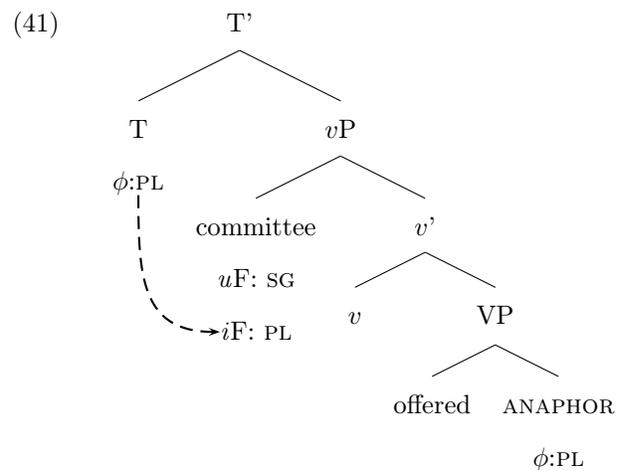
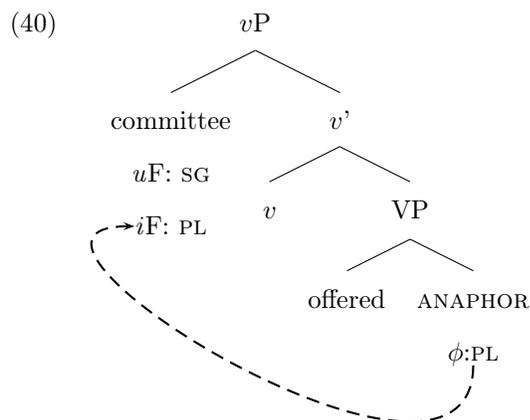
He further assumes that *i*Fs can be deactivated throughout the derivation either by starting the derivation deactivated or via undergoing agreement (cf. Chomsky's (2000) Activation Condition).

With these assumptions, let's examine how Smith's analysis accounts for the data in (35), starting with (35a). Taking the standard assumption that derivations start bottom up, the anaphor will be the first to probe the subject *committee*. As shown in (38), the *i*F: PL feature

has begun the derivation deactivated (indicated via strike out), hence the anaphor agrees with the $uF: SG$ feature. Once T is merged into the derivation in (39), it probes *committee* also resulting in singular agreement.

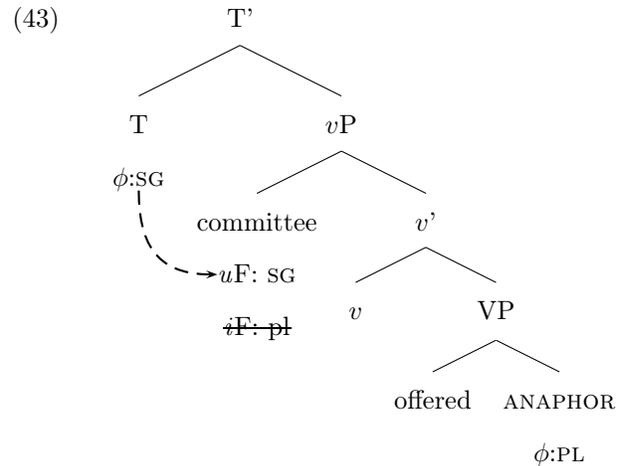
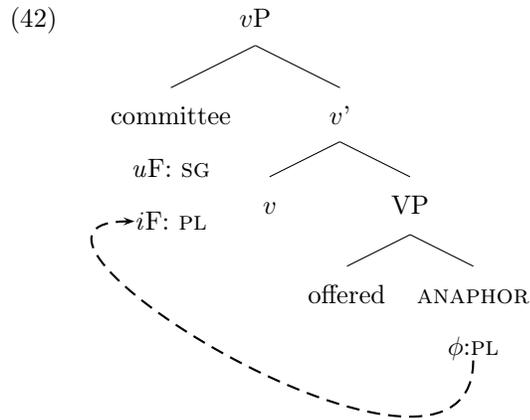


Moving on to (35b). In this case, the $iF: PL$ is not deactivated and due to the rule in (37), the anaphor must agree with those features (40). The result of agreement between the anaphor and the $iF: PL$ does not result in the deactivation of the features, however, hence when T is merged and probes it must also agree with $iF: PL$ again due to (37), as shown in (41).



Now let us turn to (35c). In this case, similar to (40), the derivation begins with the $iF: PL$ being active and the anaphor agreeing with it (42). This time however, the $iF: PL$ is

deactivated via the previous agreement operation, hence when T is merged into the structure and probes it must agree with the uF : SG feature.



Let us finally turn our attention to the impossible mismatch in (35d). In this case, the anaphor shows agreement with the uF : SG. Due to (37), this indicates that the iF : PL feature must have begun the derivation deactivated or else the anaphor would have agreed with it. Since there is no way in this system to reactivate a deactivated feature, this means that iF : PL must be deactivated when T probes as well, so there is no possible derivation in this system that would allow for the anaphor to target the uF : SG feature, while the T targets the iF : PL, hence (35d) is correctly ruled out.

4.2 How the previous theories handle the QNP data

Let us now see if these previous theories can handle the new 3/4 agreement patterns. Just as the case of the British English data in (35), both 3/4 patterns with QNPs involves the two agreement targets occurring outside of the DP, so it appears that a configurational account like Pesetsky (2013) cannot be extended to account for the QNP patterns given here.

Smith's (2015, 2017) analysis can capture at least one of the two patterns. If we assume that QNPs also involve a mismatch between semantic and morphological features, then this analysis can account for the the bound pronoun data with QNP, as it is extremely similar

the British English data that Smith built his analysis around. Recall, just as in the British English data, it is possible to have the bound element show semantic/*i*F agreement and T agreement show morphological/*u*F agreement (44a). The opposite mismatch is impossible (44b).

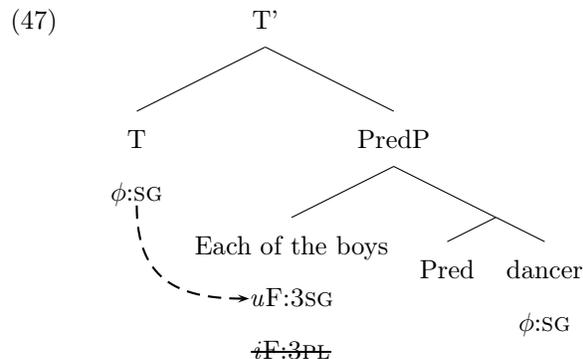
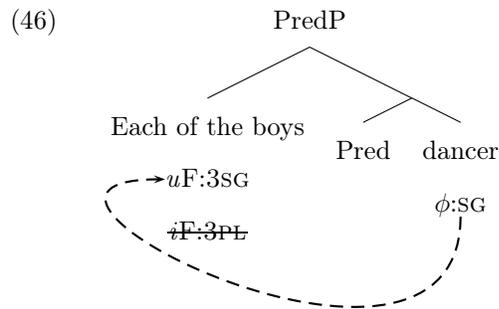
- (44) a. Each of us_{*i*} is doing our_{*i*} best.
b. #Each of us are doing his_{*i*} best.

This can be accomplished via parallel derivations laid out in (40)-(43)

Smith's analysis fails to account for the mismatches we find when the target is a predicative noun, however. Consider the possible and impossible mismatches once again repeated in (45). Recall that in this pattern, the judgments flip: now the predicate nominal shows agreement with the morphological features and T shows agreement with the semantic features (45a). The opposite pattern is not possible (45b).

- (45) a. ?Each of the three boys are a dancer.
b. *Each of the three boys is dancers.

The way Smith's analysis is currently set up, the pattern in (45) cannot be generated. As the semantic features must always be targeted first, assuming bottom up structure building, we would then expect that the possible and impossible mismatches to be the same in (44) and (45), contrary to fact. This is demonstrated in (46) and (47). For Smith's analysis to capture (45a), we must assume that the semantic feature of the QNP is deactivated to start the derivation in order for the predicate noun to target the morphological singular feature (46). Since, there is no way to reactivate the semantic feature, T must also agree with the concord feature (47), hence it is impossible to generate (45a). Moreover, it is possible to generate the impossible mismatch in (45b).



Hence, Smith’s system also fails to account for the full range of data presented here.⁷ In the next section, I will present a novel analysis of 3/4 patterns that account for the previous data. The novel innovation of this analysis is that agreement does not always occur in the order that the elements merge, but in certain circumstances, is delayed to later in the derivation. This allows us to account for the new patterns presented here.

4.3 A new analysis

In this section, I will present a new analysis of 3/4 patterns. I assume following the previous analyses, that hybrid nouns and QNPs have mismatch in morphological (ϕ_M) and semantic (ϕ_S) features. What the novel QNP data show us is that there is a difference in the pattern when the target of agreement differs. In order to account for this, I propose that different targets agree at different times, I follow the previous authors who have worked on 3/4 agreement patterns and assume that attributive and predicate concord and T agreement happens as soon as the elements are merged into the syntax. Pronouns and anaphors, however behave differently and do not agree with their antecedent when first merged into the syntax. Instead, I argue following a number of recent works, that the mechanism that underlies agreement with pronouns and anaphors happens late in the derivation at the interfaces and not in the syntax proper (Heim 2008; Kratzer 2009; Landau 2016a; Wurmbrand 2017).

⁷Note also that Smith’s analysis is quite difficult to extend to account for cases with DP-internal agreement. In order to account for these patterns one must assume mandatory late merge of adjectives inside the DP after agreement with T has taken place. While such accounts of mandatory counter-cyclic merge exist (e.g., Stepanov 2001), the availability of such operations is very controversial (Sportiche 2016, 2018).

There are reasons to think that the mechanism that underlies agreement between pronouns and antecedents does not occur in the syntax proper. For instance, the locality conditions on such agreement are much looser than agreement that is thought to take place in the syntax (e.g., predicate-argument agreement): a bound variable pronoun can agree with its antecedent across several clause boundaries. These types of observations have lead Preminger (2019) to suggest that the mechanism that underlies pronoun-antecedent ϕ -matching is non-syntactic in nature and instead must occur at the interfaces.

In addition to the discussion above, another line of research has used the interface analysis of pronoun/anaphor agreement to account for the fact that features on bound pronouns appear uninterpreted at LF. For instance, take the case of the dependent plural that has been used in previous examples. Although the pronoun is morphologically plural, when it is bound, it is compatible with a singular predicate as in (48a). When it is not bound, however, it can no longer compose with a singular predicate (48b). The PF view of agreement with pronouns accounts for this difference. When the pronoun is bound, its plural features are only present at PF via agreement with its antecedent, in the narrow syntax and at LF, there is no plural feature on the pronoun, hence, it can compose with a singular predicate. When the pronoun is not bound, however, the pronoun is born with plural features and hence those feature exist in the narrow syntax and at LF as well, hence it cannot compose with a singular predicate.

- (48) a. Each of us thinks we are the richest linguist.
b. #We are the richest linguist.

This has also be used to account for so-called fake indexical readings of first person pronouns. Take for example the case in (49). This example is ambiguous between the two readings in (49a) and (49b). For the reading on (49b), it appears that the first person features of the pronoun are uninterpreted. A prominent account of this reading is to once again have the features of the pronoun only occur at PF, hence invisible for interpretation at LF (Kratzer

1998; Heim 2008; Kratzer 2009; Wurmbrand 2017).

- (49) Only I did my homework.
- a. No one else did my homework.
 - b. No one else did his or her homework.

The fact that we do see 3/4 pattern interactions between what we might call purely syntactic agreement (e.g., T-agreement) and features on bound pronouns/anaphors, however, tells us that these two mechanisms, though distinct, are not completely independent of one another. What I suggest is that agreement operations that happen in the syntax proper can end up restricting the features available later when the structure is sent to the interfaces. If placed in an order, agreement of anaphors and pronouns will occur after agreement of attributive and predicate concord and T-agreement, which both happen in the syntax and are tied to the order in which those elements are first merged into the structure (50).

- (50) Order of agreement (across target classes)
- DP-internal concord < predicate concord < T-agreement < pronoun/anaphor agreement

Note now that our ordering of agreement now closely resembles the Agreement Hierarchy of Corbett (1979), repeated below. This suggests that the agreement hierarchy can be thought of in terms of order agreement operations take place.

- (51) Attributive < Predicate < Relative pronoun < Personal pronoun
- (Corbett 1979: 204)

So far we have considered the ordering between classes of targets. Now, let us consider cases where both agreement targets are from the same class (e.g., two attributive adjectives in Russian). I assume these too are ordered, and the criteria is merge order (as is standardly

assumed): the element merged first is valued first. This is shown in (52).

(52) Order of valuation (within target classes)

$$\text{Merge}^1 < \text{Merge}^2 \dots < \text{Merge}^n$$

In addition to the assumption about the ordering of valuation, I will assume that morphological and semantic features are ordered in such a way that morphological features are made available for agreement first and semantic features are available after morphological. This is similar in spirit to Pesetsky (2013) and Landau (2016b)'s idea that the morphological features are merged in before the semantic features enter the derivation (see also Kučerová 2018 who argues that semantic features enter the derivation late).

(53) Ordering of features

$$\text{Morphological} < \text{Semantic}$$

I also assume that there is a condition on access to the features. I assume that the mapping from the order of features in (53) to the agreement targets order in (50) and (52) must be *monotonic* (cf. Aissen 1999's harmonic scale alignment in Optimality Theory). A monotonic mapping between two collections of ordered elements must preserve the relative orders of those elements. The formal definition is given in (54).

(54) Given two orders \leq_A and \leq_B , a function f is monotonic with respect to \leq_A and \leq_B iff it holds for all objects x and y ordered such that $x \leq_A y$ implies $f(x) \leq_B f(y)$.

Using the orders in (50) and (53) as an example, a monotonic mapping would be T-agreement mapping to morphological features and pronoun anaphor agreement mapping to semantic, as T-agreement is ordered before pronoun/anaphor agreement and morphological features are ordered before semantic features. A mapping of T-agreement to semantic features and pronoun/anaphor agreement to morphological features however would not be

monotonic because T-agreement comes before pronoun/anaphor agreement, but semantic features are ordered *after* morphological features, so this mapping would reverse the ordering. This is shown schematically in the figures below. Given two agreement targets, the first three mappings to morphological and semantic features are monotonic as they do not reverse the two orders. The final “crossing lines” mapping is a non-monotonic mapping. This is precisely the mapping that is ungrammatical in every 3/4 pattern.

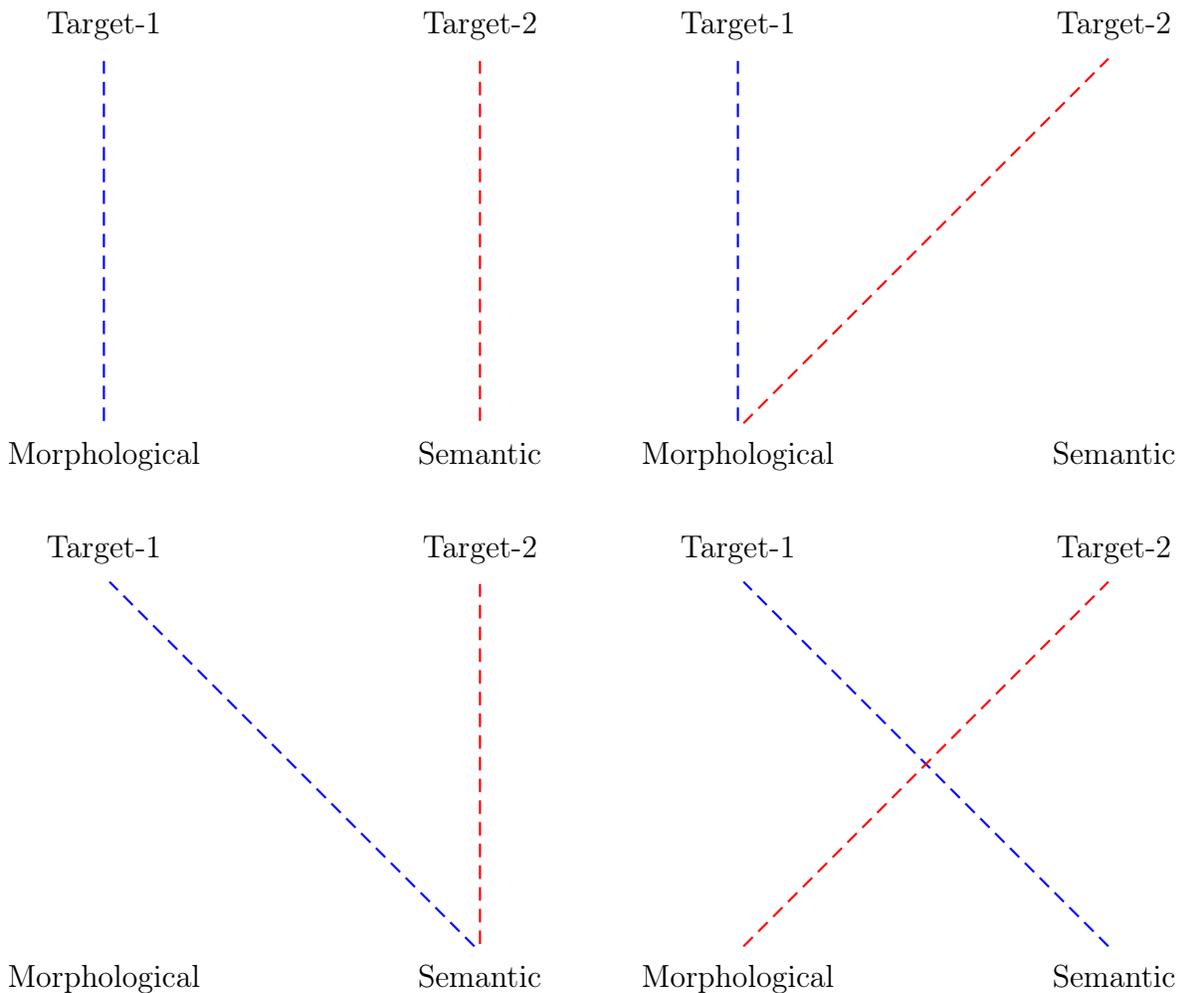


Figure 1: Possible mappings

It is important to note that monotonicity has been shown to have explanatory power outside the realm of agreement and has been used to model a number of morphosyntactic patterns in Graf 2019. Graf uses monotonicity to account for Person Case Constraint effects (Bonet

1991 *et seq.*) and also *ABA effects found in morphology (Bobaljik 2012), to give just two examples; so monotonicity should be viewed as a general constraint that operates over more than just agreement.

Given the orders in (50) and (53) and only allowing monotonic mappings between the two, we derive the constraint in (55).

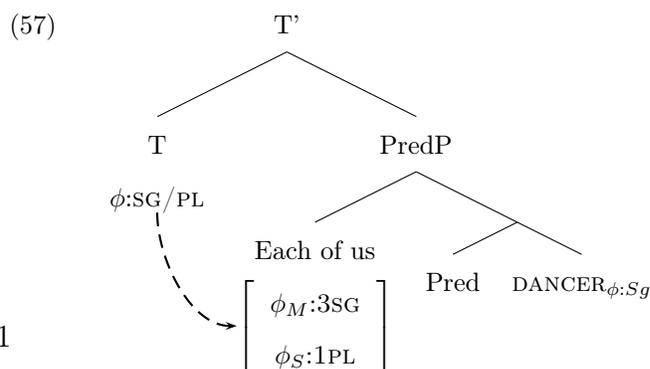
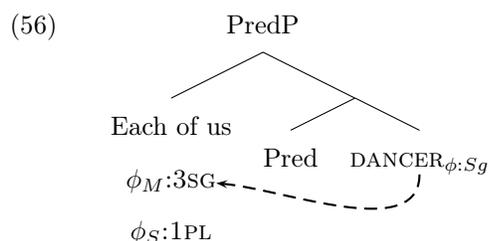
(55) **Monotonicity Agreement Constraint (MAC)**

Once semantic features have been accessed for an agreement operation, all other subsequent agreement operations must target the semantic features.

In the next section I will show how the above constraint can derive the novel 3/4 patterns discussed here as well as the ones from the previous literature.

4.3.1 Derivations

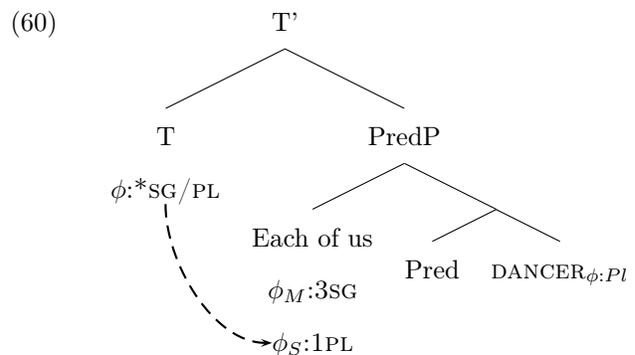
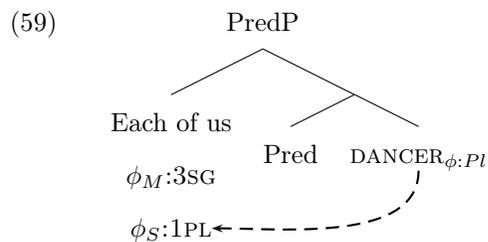
Let us work through derivations of the QNP data to show how the present system accounts for the patterns observed. Let us first begin with the predicate noun data with a QNP. The QNP and the predicate noun are merged into a Pred phrase and the predicate noun undergoes merge concord with the QNP and targets the 3SG morphological features (56). Once T is merged into the structure, it is possible for it to agree with the 1PL semantic feature or the 3SG morphological feature. Either option would not violate MAC, so both options are available (here and throughout the remainder paper, when both semantic and morphological features are potential controllers, they are placed in square brackets within the tree, otherwise the target will link directly with the feature being agreed with).



This derivation would hence allow for both targets to surface as singular or the predicate noun to surface as singular and the T agreement to surface as plural, hence correctly accounting for the grammaticality of the sentences in (58).

- (58) a. Each of us is a dancer.
 b. Each of us are a dancer.

Now let us observe the derivation in (59) and (60). In (59), the predicate noun now agrees with the 1PL semantic feature. When T is merged and probes *each of us*, it must also agree with the semantic feature, T agreeing the 3SG morphological feature would violate MAC and hence be ruled out.

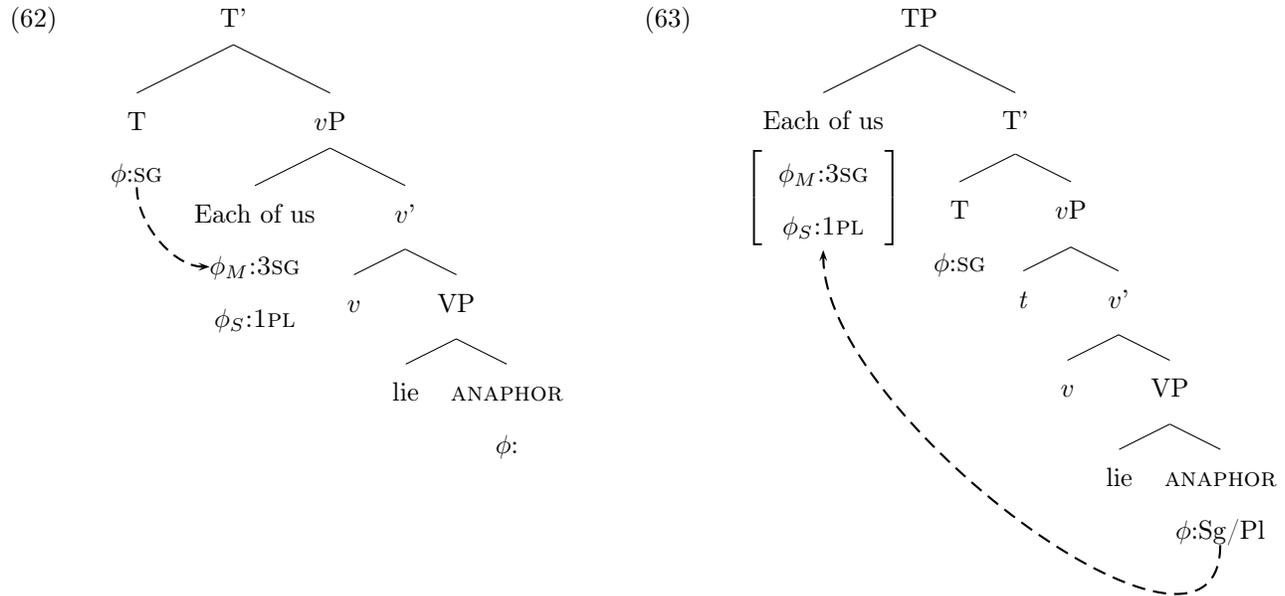


This derivation hence only allows for both targets to surface as plural. It cannot generate a structure where T agrees with the 3SG morphological feature and the predicate noun agrees with the 1PL semantic feature. Correctly accounting for the judgements in (61).

- (61) a. Each of us are dancers.
 b. *Each. of us is dancers.

Now consider the cases where one of the agreement targets is an anaphor. Recall from the previous section, it was argued that agreement with pronouns occurs late in the derivation at the interfaces, after agreement for concord and T agreement. This means that even though the anaphor and the QNP are merged into the structure before T, no agreement happens

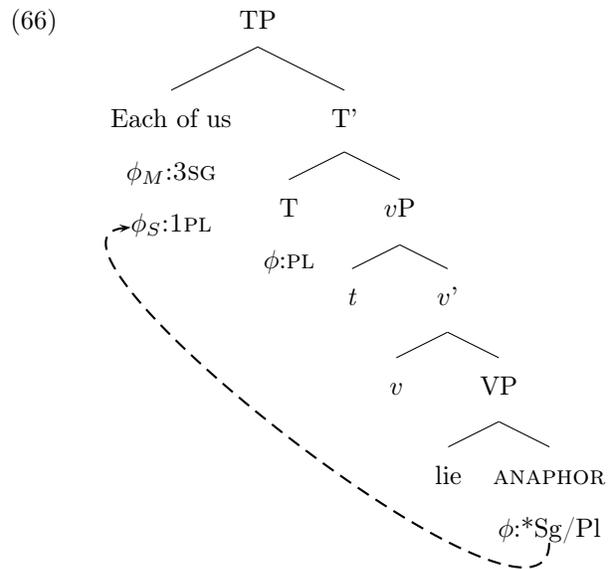
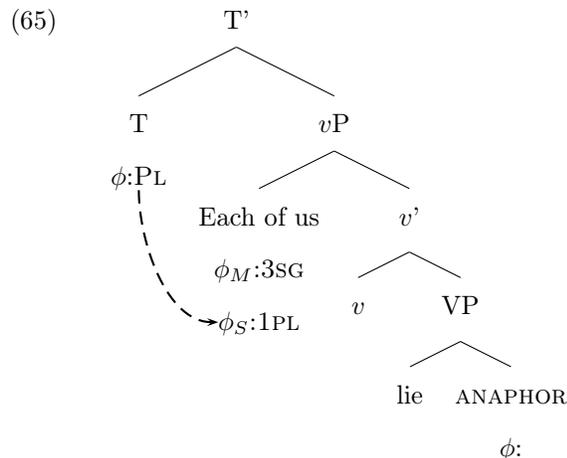
between the two at this stage of the derivation. T is then merged into the structure. In this derivation, T agrees with the 3SG morphological features of the QNP (62). After the structure has been spelled out to the interfaces, agreement of the anaphor takes place. The anaphor may agree with either the semantic or morphological feature and not violate MAC, as shown in (63).



This derivation would hence allow for the both the T agreement and the anaphor to show 3SG morphological features or for T to show 3sg agreement and the anaphor to agree with 1PL semantic features. Accounting for the grammaticality of the sentences in (64).

- (64)
- a. Each of us_i lies to himself_i.
 - b. Each of us_i lies to ourselves_i.

Now let us walk through the other possible derivation. This time T agrees with the 1PL semantic features and surfaces as plural agreement (66). When the derivation is transferred to the interfaces, the anaphor is valued. Due to MAC, it must also target the semantic features (66). Morphological features are not accessible.

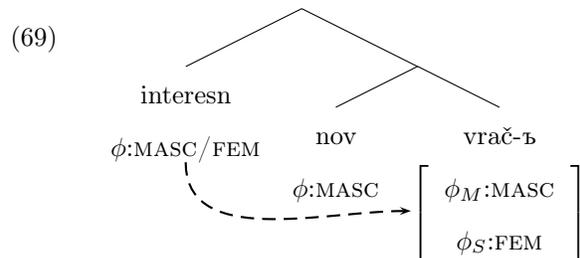
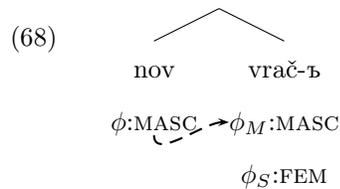


This correctly predicts that when the agreement on T is with the 1pl index features, the features on the anaphor must also be 1pl, hence we correctly predict the judgments in (67).

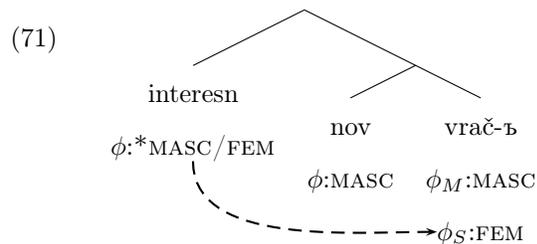
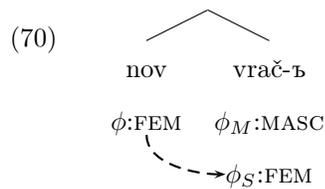
- (67) a. Each of us_{*i*} lie to ourselves_{*i*}.
 b. *Each of us_{*i*} lie to himself_{*i*}.

Let us now turn our attention to the 3/4 patterns from the previous literature. The British English examples from Smith 2015, 2017 follow the same pattern as what has been outlined above for the QNP and anaphors, so the derivations in (62)-(63) and (65)-(66) would also account for that pattern. The pattern we see in Russian and Hebrew would also follow from the same analysis. Recall that in these cases the two targets were either two attributive adjectives or an attributive adjective and T agreement. Let us first work through the cases where there are two attributive adjectives. This example is slightly different from previous ones in that both agreement targets are from the same class (i.e., they are both DP internal adjectives). Recall that when the targets are the same type of element, the order of agreement is determined by the order of merge following both Pesetsky (2013) and Landau (2016b) (see (52)). These data would fit into the analysis as follows: the noun *vrač* merges

into the structure with masculine morphological features and feminine semantic features. The lower of the two adjectives merges with the noun and undergoes agreement with it (68). In (68), the lower adjective agrees with the masculine morphological features, hence when the higher adjective is merged into the structure, it can agree with either the morphological or semantic features and not violate MAC as shown in (69).



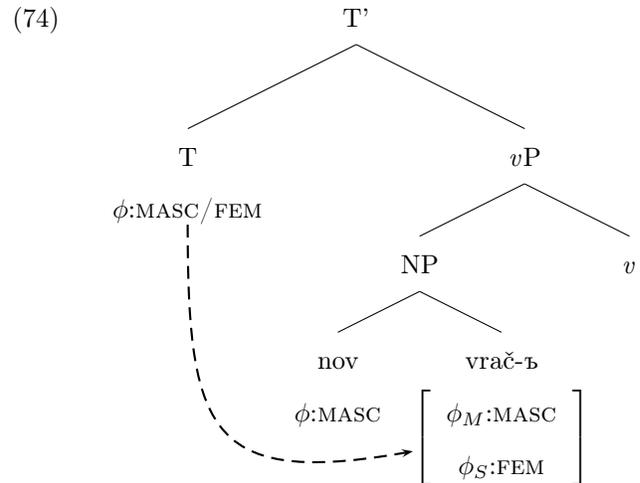
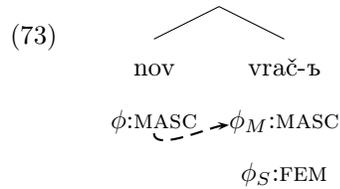
Now consider the derivation below in (70) and (71). This time the lower adjective has agreed with the feminine semantic features (70), as a result, the higher adjective must also target the semantic features; agreeing with the morphological features would violate MAC, as shown in (71).



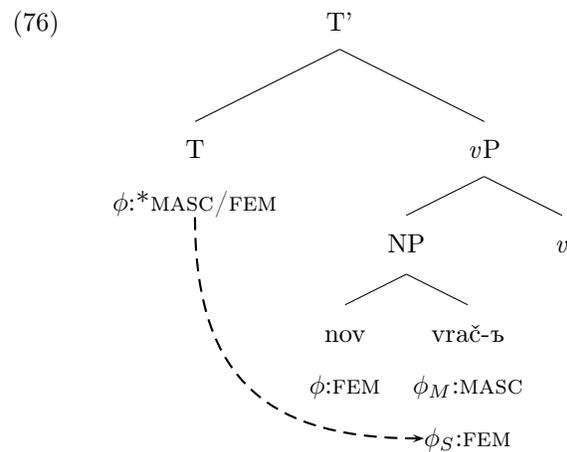
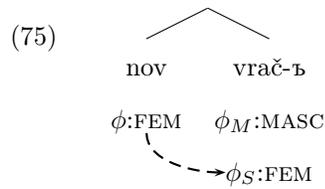
This system then correctly predicts the judgments of the two mismatch cases when we have agreeing attributive adjectives repeated below.

- (72)
- a. ?U menja očēn' interesn-aja nov-yj vrač-ъ
 by me very interesting-F.NOM.SG new-M.NOM.SG doctor-NOM.SG
 'I have a very interesting new (female) doctor.'
- b. *U menja očēn' interesn-yj nov-aja vrač-ъ
 by me very interesting-M.NOM.SG new-F.NOM.SG doctor-NOM.SG
 'I have a very interesting new (female) doctor.'

Finally, let us consider the case where the agreeing targets are an attributive adjective and T. Once again, the adjective would be merged with the noun first and undergo agreement with it. In (73), the adjective agrees with the masculine. That structure is merged into the clause and once T is merged, it can once again target either the semantic or morphological features (74).



If the adjective targets the semantic feature, as in (75), then, due to MAC, then T must also target the semantic feature (76).



We have once again accounted for the 3/4 pattern with out new system.

4.4 Examples with two pronouns/anaphors

Let us now look at another set of novel examples. This time involving two targets from the anaphor/pronoun class. As we saw with DP-internal concord, the order of agreement was determined by the merge order within that class. Items that we merged first, agreed first. This accounted for the Russian examples with two agreeing DP-internal adjectives. We see that merge order also plays a role in the cases below when the two targets are both from the pronoun/anaphor class. Observe the 3/4 pattern below. We have a QNP that is binding both a local anaphor and a pronoun in the embedded clause. As we see in the judgments, either both elements can target the morphological features and appear as 3SG (77a), both can target the semantic features and appear as 1PL (77b), or the embedded pronoun can target the morphological features and surface as 3SG while the anaphor targets the semantic features and surfaces 1PL. The opposite pattern where the pronoun targets the semantic features and the local anaphor targets the morphological features is once again ruled out on the bound variable reading.

- (77)
- a. Each of us_i told himself_i that he_i was smart.
 - b. Each of us_i told ourselves_i that we_i were smart.
 - c. Each of us told ourselves_i that he_i was smart.
 - d. #Each of us told himself_i that we_i were smart.

This follows from the system presented here. Once again assuming bottom up structure building, the embedded pronoun will be merged into the structure first followed by the anaphor. Given our ordering in (52), this means that the pronoun must agree first. If it targets the morphological features of the controller (i.e., 3SG), then the anaphor can target either the semantic or morphological features without violating the MAC, hence we correctly predict the judgments in (77a) and (77c). If the pronoun first targets the semantic 1PL feature, then due to the MAC, the anaphor must also target the semantic feature giving

us (77b). A derivation where the embedded pronoun targets the semantic features but the anaphor targets morphological features violates the MAC, hence we correctly rule out (77d).

The above discussion hence provide further evidence that merge order plays a role when the two targets are within the same class even for pronoun/anaphors. These examples are also interesting because the target that is merged first is structurally further away from the controller than the target that is merged later. This tells us that structural proximity to the controller does not determine order of agreement.

4.5 Examples with three targets

Before concluding this section, let us briefly explore how this system also accounts for cases where we have three agreement targets: T-agreement, a predicate noun, and an anaphor. Given there are two potential values for each of the three targets, that means there are eight possible combinations. For reasons of space, I will not walk through step by step derivations for each of the eight possibilities, but I will give each combination and discuss how the current system captures it. The controller will once again be the QNP *each of us*; this means that the morphological features of the controller will be 3SG and the semantic features will be 1PL. The first cases given in (78) involve each target agreeing with morphological (78a) or semantic features (78b).

- (78) a. Each of us is a critic of himself
b. Each of us are critics of ourselves.

Moving onto the more interesting cases where there are mismatches. It is possible for only the anaphor to show semantic agreement while the other two targets agree with the morphological features (79a) or for both the anaphor and T-agreement to target the semantic features while the predicate noun targets the morphological features (79b). Both of these examples are correctly predicted to be grammatical as both involve monotonic mappings of targets to

feature values.

- (79) a. Each of us is a critic of ourselves.
b. ?Each of us are a critic of ourselves.

In (80), we see two other potential combinations. In (80a), the predicate noun and T-agreement target the semantic features while the anaphor targets the morphological features. This is correctly ruled out because predicate nouns and T agreement are ordered before anaphors and hence the derivation of (80a) violates the MAC. Example (80b) likewise violates the MAC as the predicate noun targets the semantic features, but T-agreement targets the morphological features, hence we once again correctly rule that combination ungrammatical.

- (80) a. *Each of us are critics of himself.
b. *Each of us is critics of himself.

The final two examples also violate the MAC. In (81a) both the predicate noun and the anaphor target the semantic features, but T-agreement targets the morphological features. This violates the MAC as predicate nouns are ordered before T-agreement. The example in (81b) is ruled out because T-agreement targets the semantic features, but the anaphor targets the morphological features. As T-agreement precedes anaphors in the ordering, such a mapping would violate the MAC.

- (81) a. *Each of us is critics of ourselves.
b. *Each of us are a critic of himself.

The system developed here, hence, can also account for more complex patterns involving three agreement targets in a single sentence.

4.6 Summary

To summarize this section, I first reviewed two representative analyses of 3/4 patterns from the previous literature and showed that they could not be extended to account for the novel 3/4 patterns with QNPs presented here. An issue with the previous analyses was that agreement was always tied to the order of merge: targets that merged first, agreed first. I argued that this view is only partially correct. Within a class of agreement targets, merge order does matter, however certain elements can agree later in the derivation than their initial merge timing. Concretely, I argued that pronoun/anaphor agreement occurred late in the derivation as compared to concord agreement and T agreement. This insight coupled with a monotonicity condition on feature valuation, which makes morphological features unavailable after a target has been valued by semantic features, covered all of the data including the novel patterns covered in the previous section. Before concluding, I will extend this theory to another new 3/4 pattern involving monstrous agreement in Telugu.

5 An extension to Telugu monstrous agreement

Telugu (Dravidian, South Asia) will be the source of a third and final novel case study of 3/4 agreement patterns. Telugu displays verbal agreement morphology with unmarked (non-inactive) arguments in person, number and gender. Illustrative examples of the agreement morphology are given in (82) and (83).

- (82)
- | | | | |
|----|---|----|--|
| a. | neenu parigett _{nn} -ææ-nu
1SG run-PAST-1SG
'I ran.' | d. | Rani parigett _{nn} -in-di
Rani run-PAST-F.SG
'Rani ran.' |
| b. | nuvvu parigett _{nn} -ææ-vu
2SG run-PAST-2SG
'You ran.' | e. | kukka parigett _{nn} -in-di
dog run-PAST-N.SG
'A dog ran.' |
| c. | Raju parigett _{nn} -ææ-Du
Raju run-PAST-M.SG
'Raju ran.' | | |

- (83)
- | | | | |
|----|---|----|--|
| a. | meemu parigett _{nn̄} -ææ-mu
1PL.EXCL run-PAST-1PL
'We ran.' | d. | peLLa-lu pariget _{n̄} -ææ-ru
wife-PL run-PAST-PL
'The wives ran.' |
| b. | miiru parigett _{nn̄} -ææ-ru
2PL run-PAST-PL
'You(pl) ran.' | e. | aawu-lu pariget _{n̄} -ææ-yi
cow-PL run-PAST-N.PL
'The cows ran.' |
| c. | anna-lu parigett _{nn̄} -ææ-ru
brother-PL run-PAST-PL
'The brothers ran.' | | |

The agreement affixes for verbal agreement are summarized in the table below.

Features	Morphology
1sg	-nu
2sg	-vu
3Msg	-Du
3Fsg	-di
3Nsg	-di
1pl	-mu
2pl	-ru
3Mpl	-ru
3Fpl	-ru
3Npl	-yi

Table 1: Verbal agreement morphology

In addition to verbal agreement, we find a different set of agreement markers on predicate nouns and adjectives. This type of agreement is only found for first singular and plural and second person singular. It is null throughout the rest of the paradigm. Relevant examples are given below in (84).

- (84)
- | | |
|----|--|
| a. | neenu vidyaardhi-ni
1SG student-1SG
'I am a student.' |
| b. | nuvvu vidyaardhi-wi
2SG student-2SG
'You are a student.' |
| c. | meemu vidyaardhu-la-mu
1SG student-PL-1PL |

‘We are students.’

This is summarized in the table below.

Features	Morphology
1sg	-ni
2sg	-wi
3sg	∅
1pl	-mu
2pl	∅
3pl	∅

Table 2: Pronominal suffix for predicate nominals and adjectives

Note that in the case of predicate adjectives, the adjective must be attached to a pronoun *vaaDi*, which I will gloss as 3SG, in order to act as a predicate as show in (85).

- (85) *nuvvu manci-vaaDi-wi*
 2SG good-3SG-2SG
 ‘You are good.’

Note that pronominal suffix markers must be seen as a distinct agreement probe from the probe found on T. This distinguishes it from the superficially similar pattern found in Sakha as described in Baker (2011). In Sakha, predicate adjectives appear to host person agreement affixes just like in Telugu. This is shown in (86).

- (86) *Sakha* (Baker 2011: (10))
- a. *Ehigi bytaan-nyt*
 2PL.NOM slow-2PLS
 ‘You are slow.’
- b. *Bihigi bytaam-myt*
 1PL.NOM slow-1PLS
 ‘We are slow.’
- c. *Min bytaam-myn*
 1SG.NOM slow-1SGS
 ‘I am slow.’

Baker analyzes these agreement markers as instances of T agreement. The agreement only appears on the adjective as a result of a morphological merger like operation. Evidence for this comes from the fact that when an auxiliary is present, agreement no longer appears on the adjective, but rather solely on the auxiliary.

- (87) Bihigi bytaam-(*myt) buol-a-byt
 1PL.NOM slow-(*1PLS) be-AOR-1PLS
 ‘We are slow.’ (Vinokurova 2005: 205)

Telugu, on the other hand, shows a different pattern. In the simple present tense, the copular verb does not appear with predicate nouns and adjectives, however, it does show up in non-simple present contexts. When it does appear, it hosts both tense and agreement morphology. The agreement marker on the predicate element exists alongside it. If the agreement marker on the adjective is dropped, the sentence is judged unacceptable, as shown in (88).⁸

- (88) neenu picci-vaaDi-*(ni) avu-taa-nu
 1SG mad-3SG-*(1SG) be-FUT-1SG
 ‘I will become mad/ a mad man.’ (Raghotham 2020: (9))

Telugu has so-called monstrous agreement when the element *tanu* controls agreement in attitude environments when the pronoun receives a *de se* interpretation (Messick 2016, 2020).⁹ The element *tanu* itself is 3rd person, as shown by the fact it cannot take first or second person elements as antecedents (89).

⁸This data suggests the Telugu pronominal suffix is a true exception to the Structural Condition on Person Agreement (SCOPA) of Baker (2008, 2011). This data is also problematic for a neat CONCORD/INDEX distinction as proposed by Wechsler & Zlatić (2000, 2003). For them, agreement with predicate adjectives is a form of CONCORD, and person features are thought to only occur in INDEX agreement. I leave why Telugu appears to be exceptions to these robust generalizations as a matter for future research.

⁹The second person *nuvvu* can also control monstrous agreement in certain circumstances. I will only concern myself here with examples involving *tanu* here for presentational simplicity. See Messick (2020) for an extension of the analysis here to account for the *nuvvu* data as well.

- (89) a. *nuvvu [$\underset{\text{n}}{\text{tanu}}$ $\underset{\text{nn}}{\text{parigett-}\text{\textasciixchar{00A6}}\text{-nu}}$ ani] $\text{cepp-}\text{\textasciixchar{00A6}}\text{-vu}$
 2SG 3SG run-PAST-1SG COMP say-PAST-2SG
 Intended: ‘you said that you ran.’
- b. *neenu [$\underset{\text{n}}{\text{tanu}}$ $\underset{\text{nn}}{\text{parigett-}\text{\textasciixchar{00A6}}\text{-nu}}$ ani] $\text{cepp-}\text{\textasciixchar{00A6}}\text{-nu}$
 1SG 3SG run-PAST-1SG COMP say-PAST-1SG
 Intended: ‘I said that I ran.’

Although third person, *tanu* can control first person agreement on the verb and predicate nouns/adjectives, as shown in (90). (90a) shows monstrous agreement with embedded verbal agreement morphology. (90b) shows monstrous agreement with a predicate adjective.

- (90) a. Raju $\underset{\text{n}}{\text{tanu}}$ $\underset{\text{nn}}{\text{parigett-}\text{\textasciixchar{00A6}}\text{-nu}}$ ani $\text{cepp-}\text{\textasciixchar{00A6}}\text{-Du}$
 Raju 3SG run-PAST-1SG COMP say-PAST-3MSG
 ‘Raju said that he ran.’ (Messick 2020: (1))
- b. Akhil $\underset{\text{n}}{\text{tanu}}$ manci-vaaDi-ni ani $\text{bhaavinc-}\text{\textasciixchar{00A6}}\text{-Du}$
 Akhil 3SG good-3SG-1SG COMP consider-PAST-3MSG
 ‘Akhil thought himself a good chap.’ (Raghotham 2019: (5))

Note that monstrous agreement is optional in both cases, the same examples with third person agreement are also grammatical, as shown in (91).

- (91) a. Raju $\underset{\text{n}}{\text{tanu}}$ $\underset{\text{nn}}{\text{parigett-}\text{\textasciixchar{00A6}}\text{-Du}}$ ani $\text{cepp-}\text{\textasciixchar{00A6}}\text{-Du}$
 Raju 3SG run-PAST-3MSG COMP say-PAST-3MSG
 ‘Raju said that he ran.’
- b. Akhil $\underset{\text{n}}{\text{tanu}}$ $\text{manci-vaaDi-}\emptyset$ ani $\text{bhaavinc-}\text{\textasciixchar{00A6}}\text{-Du}$
 Akhil 3SG good-3SG-3SG COMP consider-PAST-3MSG
 ‘Akhil thought himself a good chap.’

It is only in the embedded environments where *tanu* can control monstrous agreement. If agreement with *tanu* occurs in a matrix clause, only third person agreement is possible; first person agreement is ungrammatical, as shown in (92).

- (92) a. $\underset{\text{n}}{\text{tanu}}$ $\underset{\text{nn}}{\text{parigett-}\text{\textasciixchar{00A6}}\text{-Du}}$
 3SG run-PAST-M.SG

‘He ran.’

- b. *tanu parigett-ææ-nu
3SG run-PAST-1SG
‘He ran.’

Though very similar, monstrous agreement is a distinct phenomena from so-called indexical shift (see Deal to appear for a recent overview of indexical shift). With monstrous agreement, it is possible for agreement morphology to shift and surface as first person. In languages with indexical shift, indexical pronouns themselves shift. This is demonstrated in (93) for Zazaki. The first person pronoun *εz* can shift when embedded in attitude environments and refer to Hesen,

- (93) Hεsen_j va kε εz_j dεwletia
Hesen.OBL said that I rich.be-PRES
‘Hesen said that he was rich.’ (Anand & Nevins 2004: 22)

In Telugu, pronouns never shift. This is shown in (94). The pronoun *neenu* must refer to the current speaker and cannot refer to Raju.

- (94) Raju [neenu eemi tinn-aa-nu ani] čεpp-ææ-Du?
Raju_i 1SG_{*i/s} what eat-PAST-1SG COMP say-PAST-M.SG
‘What did Raju say that I ate?’ (Messick 2020: (18))

We have seen individually that the agreement markers on both verbs and predicate nouns and adjectives can optionally shift and surface as first person in Telugu. We have also seen in (88) that both agreement makers can co-occur in the same clause. Let us now examine what are the possibilities when both markers are embedded in an environment where they could potentially surface as first person. When we embed a clause that has both agreement morphology on the copular verb and on the predicate adjective, we see a 3/4 pattern emerge once again. It is possible that both the elements shift (95a), or that neither shift (95b). Of the two potential cases where only one agreement markers shifts, only one case is grammatical.

It is possible that the agreement marker on the copular verb shifts and surfaces as first person while the agreement marker on the predicate adjective does not shift and surfaces as third person (i.e., null). The inverse where the predicate adjective agreement marker shifts and surfaces as first person, while the agreement marker on the copula verb does not shift and surfaces as third person is ungrammatical.

- (95) a. Raju [tanu picci-vaaDi-ni ava-taa-nu ani] čepp-ææ-Du
 Raju 3SG mad-3SG-1SG be-FUT-1SG COMP say-PAST-3MSG
 ‘Raju said that he will become mad/a mad man.’
- b. Raju [tanu picci-vaaDi-∅ ava-taa-Du ani] čepp-ææ-Du
 Raju 3SG mad-3SG-3SG be-FUT-3MSG COMP say-PAST-3MSG
 ‘Raju said that he will become mad/a mad man.’
- c. Raju [tanu picci-vaaDi-∅ ava-taa-nu ani] čepp-ææ-Du
 Raju 3SG mad-3SG-3SG be-FUT-1SG COMP say-PAST-3MSG
 ‘Raju said that he will become mad/a mad man.’
- d. *Raju [tanu picci-vaaDi-ni ava-taa-Du ani] čepp-ææ-Du
 Raju 3SG mad-3SG-1SG be-FUT-3MSG COMP say-PAST-3MSG
 ‘Raju said that he will become mad/a mad man.’

So once again we see the familiar 3/4 pattern that we have seen with other elements that have the ability to control two distinct feature values. In the schematic form, the possible mismatch case is given in (96).

- (96) [tanu [[Target-2:[3SG]] Target-1:[1SG]]]

Despite superficial differences in word order, this pattern is exactly the same we have seen before with QNPs when the agreement targets were a predicate DP and verbal agreement. Schema repeated in (97).

- (97) [QNP [Target-1:[PL] [... Target-2:[SG] ...]]]

To summarize this section, I presented a previously unnoticed 3/4 pattern involving Mon-

strous Agreement in Telugu. The pattern displayed is the exact same found previously involving QNPs discussed in the previous section. In the next section, I will discuss how to integrate the novel Telugu pattern with the other 3/4 patterns already accounted for.

5.1 Can previous accounts of Monstrous Agreement account for the 3/4 pattern?

In the literature on monstrous agreement, there have been two main theories: the null pronoun approach of Sundaresan (2018) and the operator binding theory of Messick (2020). In the theory presented in Messick 2020, he argues that *tanu* has both a third person feature and a special type of first person feature, which he calls $\langle +\text{author}, -\text{C} \rangle$. Following an idea pursued by Schlenker (2003a,b) for logophoric pronouns, this feature marks a pronoun as the author of a speech act (+author), but not of the current speech act context (-C). This is shown in (98). Messick’s analysis states that when a pronoun is interpreted *de se*, it is first person from the perspective of the attitude holder (e.g., for the examples in the previous section, Raju’s original utterance was *neenu piccivaadini avataanu* ‘I will become mad.’), hence it will have the $\langle +\text{author}, -\text{C} \rangle$ feature. From the current speaker’s perspective, however, Raju’s original utterance is about *him*, i.e., a third person, hence it will also have $\langle -\text{author} -\text{addressee}, +\text{C} \rangle$ features as well. This allows the pronoun to underlyingly represent both perspectives of Raju and the current speaker, but the morphology of Telugu obscures that fact.

(98) *Features on de se tanu*: [$\langle -\text{author} -\text{addressee}, +\text{C} \rangle$, $\langle +\text{author} -\text{C} \rangle$ -plural, *uD*]

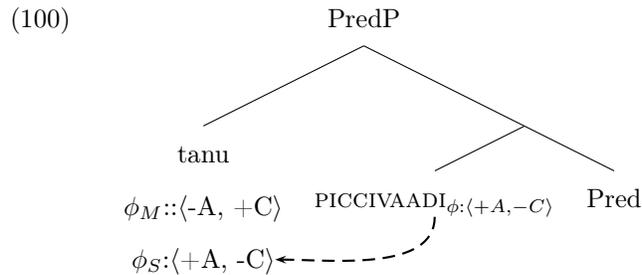
This makes *tanu* similar to the hybrid nouns and QNPs seen previously in that it involves an apparent mismatch between feature values: it is simultaneously first person and third person, just as *vrač* is simultaneously masculine and feminine. This makes Messick’s system an attractive starting point for accounting for the Telugu 3/4 pattern.

Though Messick treats the $\langle +\text{author}, -\text{C} \rangle$ feature as a standard morphological feature in Messick 2020, in Messick 2016, he labeled it as an *iF* feature (i.e., a semantic feature in our terminology). This makes some degree of sense: *tanu* is morphologically realized as third person, hence the $\langle -\text{author} -\text{addressee}, +\text{C} \rangle$ is morphological feature; the $\langle +\text{author} -\text{C} \rangle$ is not expressed morphologically on the pronoun, but instead appears to be connected to the fact that the pronoun is interpreted *de se*, an interpretation that we typically find for first person pronouns/features (see e.g., Kaplan 1977; Perry 1979; Wechsler 2010 among others), hence $\langle +\text{author} -\text{C} \rangle$ reflects the semantic features of *tanu*. This type of analysis allows us to straightforwardly account for the 3/4 pattern with the system developed here. If we treat the $\langle +\text{author}, -\text{C} \rangle$ as a type of semantic feature, then access to it will be subject to MAC, and given the ordering of valuation from the previous section (repeated below), we account for the Telugu data as well.

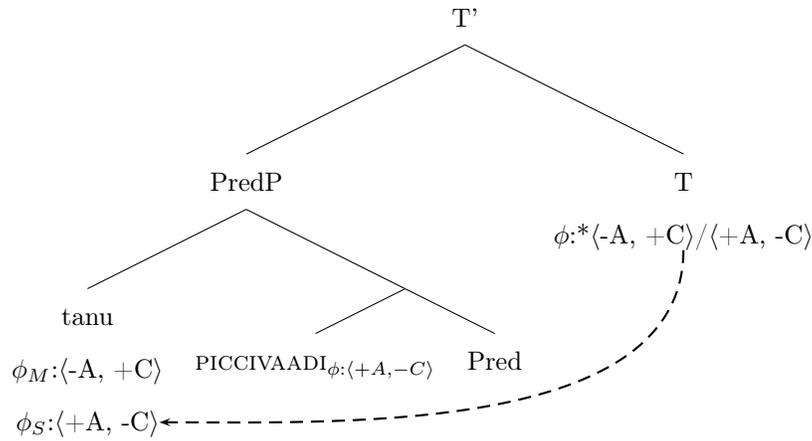
(99) Order of valuation

DP-internal and predicate concord < T-agreement < pronoun/anaphor agreement

As the first agreement target is predicate concord in the Telugu examples, if that probe targets the $\langle +\text{author}, -\text{C} \rangle$ semantic feature, then due to the MAC, then subsequent agreement by T must also target that semantic feature, hence the derivation where predicate agreement surfaces as first person and T agreement surfaces as third person would be correctly ruled out. This is shown in the derivation in (100) and (101) (for tree readability, I have abbreviated $\langle +\text{author}, -\text{C} \rangle$ to $\langle +\text{A}, -\text{C} \rangle$ and $\langle -\text{author}, +\text{C} \rangle$ to $\langle -\text{A}, +\text{C} \rangle$.)

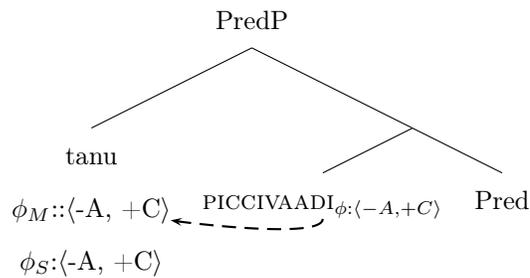


(101)

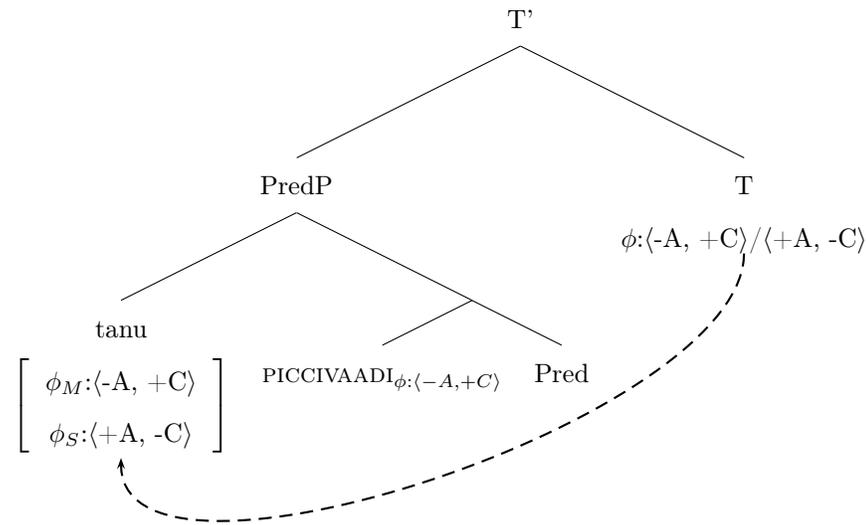


If the predicate probe targets the third person morphological features, then the T probe can target either the semantic or morphological feature without violating MAC, hence we also account for the possible mismatch where the predicate surfaces as third person agreement, but the T agreement surfaces as first person. This is shown in (102) and (103).

(102)



(103)



While the treatment of *tanu* as a hybrid like element as in Messick (2016, 2020) leads to a simple extension to the current proposal. The analysis of Sundaresan (2018) where a null pronoun controls first person agreement does not seem amenable to the novel 3/4 data. It is unclear how to capture these new observations in such an analysis, hence 3/4 pattern may provide novel evidence for the hybrid view of *tanu* in the cases where it is controlling monstrous agreement.

6 Conclusion

This paper reports the discovery of three novel 3/4 agreement patterns. Empirically, these case studies are interesting because they do not involve hybrid nouns in the intuitive sense, like we have seen with previous 3/4 patterns. Narrowly, the fact that QNPs and Telugu embedded *tanu* show such patterns provide novel evidence for theories that treat them similarly to hybrid nouns (e.g., Danon 2013; Messick 2016, 2020). More broadly the existence of 3/4 patterns with these elements tells us ‘hybridness’ or having apparent feature contradictions is not a lexical idiosyncrasy of some nouns, but rather can come about from the structure of the NP/DP itself and also the syntactic context it finds itself in.

An additional empirical contribution this paper makes is the discovery of the agreement flip that occur when the Target of agreement changes. Through the investigation of the two patterns with QNPs, we saw that in the case of two DP-external Targets, the possible mismatch would flip depending on the class of the second Target. If the Target was a pronoun or anaphor, then the mismatch schematized in (104a) would be possible, but if the Target was a predicate DP, then the mismatch in (104b) was possible.

- (104) a. [QNP [Target-1: ϕ_S [... Target-2: ϕ_M ...]]]
 b. [QNP [Target-1: ϕ_M [... Target-2: ϕ_S ...]]]

No previous approach to 3/4 agreement patterns could account for this agreement flip. I

argued that the existence of the agreement flip undermined a tacit assumption made in all other previous research on 3/4 patterns: targets that merged first, agreed first. Instead, I claimed that different classes of agreement targets get valued at different times. Specifically, I argued that anaphor/pronoun agreement occurred late in the derivation.

This proposal was then coupled with a novel constraint on access to semantic features and morphological features. It was argued that once semantic features were accessed for agreement, all subsequent agreement operations must also target semantic (the Monotonic Agreement Condition). As the 3/4 pattern appears to be quite robust and occur in a number of different languages and constructions, it makes the Monotonic Agreement Condition a strong contender for a bona fide linguistic universal. As the underpinnings of the constraint are couched in the notion of monotonicity, which has been argued to underpin a number of other morphosyntactic patterns in Graf (2019), this paper provides further evidence of monotonicity playing a central role in language design.

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