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Feature deletion by head movement – A new solution to agreement asymmetries in Modern Standard Arabic

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In this paper, I present a new approach to agreement asymmetries in Modern Standard Arabic (MSA). In MSA, the verb agrees with the subject in number whenever the word order is SV, but not if the word order is VS. I argue against previous approaches that suggest that this lack of number agreement is due to the absence of syntactic Agree in these configurations. I propose a new account that is based on the assumption that the lack of number agreement in VS orders is the result of head movement of the verb to the T head. I suggest that head movement has two effects: First, head movement of the verb can satisfy the EPP property and, second, the head movement operation that I propose leads to the deletion of the number feature in Modern Standard Arabic. I show that this approach overcomes the problems of previous approaches and I discuss some implications that the theory has for EPP movement.

1 Introduction

Subject-verb agreement in Arabic marks three categories on the verb: person, gender, and number. In Modern Standard Arabic (MSA), number agreement depends on the position (and the form) of the subject: Preverbal subjects agree in number with the verb (1a), while postverbal subjects do not agree in number (1b). Person and gender agreement are not affected in the same way.

(1)   a.   atˤ-tˤaːlibaːt-u   ʔakal-*at/na
             the-student.PL.F-NOM   eat.PST-*3SG.F/3PL.F
             'The female students ate.'   *SV* (Benmamoun 2000: 121)

        b.   ʔakal-at/*na   atˤ-tˤaːlibaːt-u
             eat.PST-3SG.F/*3PL.F the-student.PL.F-NOM
             'The female students ate.'   *VS* (Benmamoun 2000: 121)

This agreement asymmetry poses a puzzle for current syntactic and morphological theories because the generalization combines linearity – a concept usually not or only partially associated with syntax – with grammatical function – something that is in most frameworks associated with a certain syntactic position. Thus, the question is which parts of the grammar are involved in creating agreement asymmetries.

Despite the large number of different analyses proposed so far for the data in (1), the full pattern of agreement asymmetries in MSA has not been derived. The accounts in the literature can be classified according to two types: The first type assumes that the asymmetry is due to a syntactic process: Number agreement only applies in certain syntactic configurations. The second type of accounts assumes that the asymmetry is due to some morphological process: Number agreement is unrestricted in the syntax, but postsyntactic operations lead to the loss of the number marker in certain configurations.

In this paper, I show that most syntactic accounts overgenerate because they depend on the presence of both a postverbal and a preverbal subject position. I discuss structures with the auxiliary *kaana* (BE) showing that full agreement can occur without there being a postverbal subject position. As for morphological accounts, I show that they undergenerate because they falsely require adjacency between the verb and the subject. Examples which show that agreement asymmetries are not subject to adjacency are therefore problematic for morphological accounts.

Ultimately, this paper introduces a new approach that overcomes both the overgeneration and the undergeneration problem. The new approach is in itself entirely syntactic, but is based on the idea that, like in morphological analyses, number agreement applies in all configurations, but is lost in derivations where head movement leads to a VS order. I propose that this is because verb movement can check the EPP property in MSA (cf. Alexiadou & Anagnostopoulou 1998). However, checking the EPP feature comes at a price: The verb loses its number feature as the result.

The paper is organized as follows. In Section 2, I introduce the relevant data and generalizations about agreement and the verb position in MSA. Section 3 presents the new approach with detailed derivations of the full pattern. In Section 4, I compare the empirical coverage of previous analyses to the new approach. Section 5 provides a look at cross-linguistic variation of the EPP feature. Finally, Section 6 concludes.

2 Data

This section summarizes and exemplifies all the empirical observations that any analysis of agreement asymmetries in MSA should be able to derive. We start in Section 2.1 with evidence that singular is the default number in MSA. Afterwards, Section 2.2 shows the agreement asymmetry in MSA. Section 2.3 introduces the background assumptions on the clause structure and provides arguments for verb movement in MSA. Finally, Section 2.4 summarizes the empirical generalizations based on the agreement patterns and clause structure. These generalizations will be the starting point for the analysis in Section 3.

2.1 Number marking in MSA

MSA distinguishes three numbers: singular (2a), dual (2b) and plural (2c), which are marked on nouns and in verb agreement.[1]

(2)   a.   atˤ-tˤaːlibat-u   ʔakal-at
             the-student.SG.F-NOM   eat.PST-3SG.F
             'The female student ate.'   (Benmamoun 2000: 121)

       b.   atˤ-tˤaːlibat-aːni   ʔakal-ataː
             the-student.F-DU.NOM   eat.PST-3DU.F
             'The two female students ate.'   (Benmamoun 2000: 121)

       c.   atˤ-tˤaːlibaːt-u   ʔakal-na
             the-student.PL.F-NOM   eat.PST-3PL.F
             'The female students ate.'   (Benmamoun 2000: 121)

The singular marker can be considered the default number marker. It not only occurs under agreement with actual singular nouns, but also in cases with no subject. (3) presents such a case.

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[1] A large part of the examples from the literature that appear in this paper have been checked with at least one speaker of MSA. If needed, the transliteration and the glossing of the examples taken from the literature were unified. Transliteration are done according to the IPA. Examples without a reference were elicited with a speaker of MSA. Any remaining errors are my own.

(3)   *SEEM-constructions*

     a. ya-bduː   ʔanna l-ʔawlaːd-a   qad ħadˤar-uː
         3-seem.SG.M COMP the-boy.PL-ACC PTCL come.PERF-3PL.M
         'It seems that the boys have come.'   (Soltan 2006: 258)

     b. *ya-bduː-na   ʔanna l-ʔawlaːd-a   qad ħadˤar-uː
         3-seem-PL.M COMP the-boy.PL-ACC PTCL come.PERF-3PL.M
         Lit. 'They seem that the boys have come.'

     c. al-ʔawlaːd-u   ya-bduː-na   mubtahij-iːn
         the-boy.PL-NOM 3-seem-PL.M happy-PL.M.ACC
         'The boys look happy.'   (Soltan 2006: 259)

(3) shows two different constructions that involve the verb *yabduu* ('seem'). (3a) shows that *yabduu* appears with 3SG and not 3PL agreement (3b) when it takes a finite clause as its complement, unlike with infinite complements and subject raising (3c). If complement clauses provide no number feature of their own, then singular marking must be the result of a default strategy.

Further, impersonal passives are possible in MSA (4). Passives (4b) are built with a different vowel pattern then actives (4a). (4c) shows the impersonal passive. Here, there is no argument to agree with and still, the passive verb form appears in the singular.

(4)   *Impersonal passives*

     a. dʒar-a
         yusuf-u
         ran.PST.ACT-3SG Yusuf-NOM
         'Yusuf ran.'   (Frajzyngier 1982: 279)

     b. *dʒuriy-a
         yusuf-u
         ran.PST.PASS-3SG Yusuf-NOM
         Lit. 'It was run by Yusuf.'   (Frajzyngier 1982: 279)

     c. dʒuriy-a   fiː ħadiqati al-ħayawaːn
         ran.PST.PASS-3SG in garden   the-animal
         Lit. 'It was walked in the zoo.'   (Frajzyngier 1982: 280)

Given these data, it seems that the agreement marker that is used with clearly singular subjects is also used with subjects that do not have a number feature. To derive this, the easiest assumption is that singular nouns generally lack number in syntax (see Nevins 2011; Ackema & Neeleman 2019, but see Sauerland 2003 for the opposite view). If there is no number on the subject, the derivation does not crash, but the failed agreement is expressed with a default marker (see e.g. Nevins 2011; Preminger 2011). This idea is used in Section 3.2.

2.2 The agreement asymmetry in MSA

The data in (5) show that verbs do not show number agreement if the subject linearly follows the verb. Instead, the default singular marker is used.

(5) a. ʔakal-at/*na   atˤ-tˤaːlibaːt-u
         eat.PST-3SG.F/*3PL.F the-student.PL.F-NOM
         'The female students ate.'   *VS* (Benmamoun 2000: 121)

     b. wasˤal-a   ar-raʔiːs-aːni   ʔilaː dimaʃq-a   ʔamsi.
         arrive.PST-3SG.M the-president.M-DU.NOM in   Damascus-ACC yesterday
         'The two presidents arrived in Damascus yesterday.'   *VS* (Ryding 2005: 66)

     c. al-ʔawlaːd-u   raʔ-at   bint-un
         the-boy.PL-NOM see.PST-3SG.F girl-NOM.INDF
         'The boys, a girl saw them.'   *OVS* (Mohammad 2000: 50)

     d. ʔakal-a   at-tuffaːħatu al-ʔawlaːd-u
         eat.PST-3SG.M the-apple   the-boy.PL-NOM
         'The children ate the apple.'   *VOS* (Benmamoun 2000: 132)

In all the examples in (5), the verb has to show up with the default singular marker. It cannot bear the plural (5a,c,d) or the dual marker (5b). Furthermore, number agreement cannot target the object instead of the subject (5c). Finally, default agreement also shows up if the object is scrambled in front of the subject (5d).

In cases with preverbal subjects, number agreement with the verb is required, see (6).

(6) a. atˤ-tˤaːlibaːt-u   ʔakal-*at/na
         the-student.PL.F-NOM eat.PST-*3SG.F/3PL.F
         'The female students ate.'   *SV* (Benmamoun 2000: 121)

     b. atˤ-tˤaːlibat-aːni   ʔakal-*at/ataː
         the-student.F-DU.NOM eat.PST-*3SG.F/3DU.F
         'The two female students ate.'   *SV*

     c. ʔay-a   atˤ-tˤullaːb   ʔaraf-uː/*-a   al-ʔidʒaːbat-a?
         which-ACC the-student.PL.M knew-3PL.M/3SG.M   the-answer-ACC
         'Which students knew the answer?'   *S_{wh}VO* (Alotaibi & Borsley 2013: 10)

(6a) is the counterpart to (5a) with a preverbal subject and obligatory plural agreement. Note that gender agreement is not affected by the position of the subject. The same can be observed for dual agreement (5b) vs. (6b). (6c) shows that number agreement also shows up with fronted wh-subjects.

Next, cases like (7) show what happens in clauses that have two verbal elements: the imperfective marking verb *kaana* and a lexical verb with an imperfective stem.

(7) a. ka:n-at   / *kun-na   atˤ-tˤa:liba:t-u   ya-ʔkul-na
         be.PST-3SG.F / be.PST-3PL.F the-student.PL.F-NOM 3-eat-PL.F
         'The female students were eating.'   *Aux SV* (Benmamoun 2000: 122)

     b. atˤ-tˤa:liba:t-u   *ka:n-at   / kun-na   ya-ʔkul-na
         the-student.PL.F-NOM be.PST-3SG.F / be.PST-3PL.F 3-eat-PL.F

                                                              S Aux V (Benmamoun 2000: 122)

     c. *ka:n-at   / *kun-na   *ta-ʔkul / *ya-ʔkul-na atˤ-tˤa:liba:t-u
         be.PST-3SG.F / be.PST-3PL.F 3SG.F-eat / 3-eat-PL.F   the-student.PL.F-NOM

                                                                          Aux V S

We can observe in (7) that *kaana* and the lexical verb can differ in number agreement: In (7a), where the subject occurs in between both verbs, *kaana* bears default, but the lexical verb bears plural agreement. In (7b), with the subject in the clause-initial position, both verbs show plural agreement. Finally, (7c) shows that the subject cannot follow the lexical verb in constructions with *kaana* irrespective of the verbal number marking. We can conclude from the pattern in (7) that both verbs independently agree with the subject and that agreement asymmetries also occur with *kaana*.

The final set of data concerns the type of the subject. As shown in (8), number agreement on the verb is obligatory if the subject is a pronoun.

(8) a. kun-na   / *ka:n-at   ya-ʔkul-na
         be.PST-3PL.F / be.PST-3SG.F   3-eat-PL.F
         'They (female) were eating.'   *Aux V* (Benmamoun 2000: 126)

     b. (hum)   qaraʔ-u: ad-dars-a
         they.M read.PST-3PL.M the-lesson-ACC
         'They read the lesson.' $S_{pro}V$ (Soltan 2006)

     c. qaraʔ-u:/-*a   (hum-u)   ad-dars-a
         read.PST-3PL.M/*3SG.M they.M-EV the-lesson-ACC VS_{pro} (Soltan 2006)

MSA is a pro-drop language. Under the reading of a plural pronominal subject, plural agreement on both *kaana* and the lexical verb is obligatory (8a). In (8b-c), the pronominal subject is overt, which is possible but requires focus on the pronoun. (8c) shows that number agreement is obligatory even if the pronominal subject is postverbal. This is a complication for nearly all theories of agreement asymmetries since (8c) presents a counterexample to the simple generalization that verbs do not mark number if they precede the subject.

2.3 Clause structure in MSA

Having introduced the agreement asymmetry, this subsection addresses the clause structure in MSA. In accounts couched in a derivational minimalist framework, it is often assumed that

verb-initial word orders come about by movement of the verb to the functional head T, see (9). Subject-initial word orders could be the result of moving the verb to T and the subject to Spec-TP, see (10), or not moving the verb and the subject, see (11).

(9)   *Clauses with VS order (adapted from Benmamoun 2000: 128)*

```
              CP
           /      \
          C        TP
               /        \
            T+V          vP
                      /      \
                 DP_subj      v'
                            /    \
                           v      VP
                                  △
                                   t_V
```
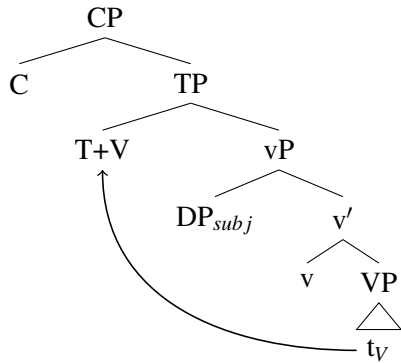
(10)   *Clauses with SV order (adapted from Benmamoun 2000: 129)*

```
                CP
             /      \
            C         TP
                   /        \
              DP_subj         T'
                          /        \
                       T+V          vP
                                 /      \
                            t_subj       v'
                                       /    \
                                      v      VP
                                      △
                                       t_V
```
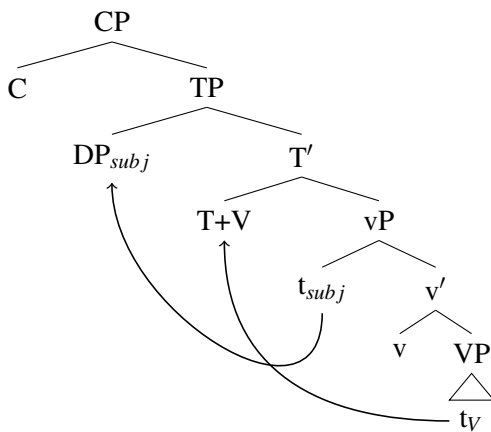
(11)   *Clauses with SV order*

```
             CP
          /      \
         C         TP
                /      \
               T        vP
                     /      \
                DP_subj       v'
                            /    \
                           v      VP
                                  △
                                   V
```
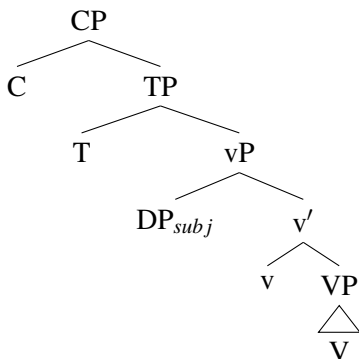
Henceforth, I argue for the analysis from Benmamoun (2000) in (9) for a verb-initial word order and (10) for a subject-initial word order. The SV structure in (11) is shown to make wrong predictions.

First of all, (12) shows that when a sentence is negated, the negation carries the tense marking (12b), while tense marking on the verb is not possible (12c). Thus, there can only be one tense marker in the clause.

(12) a. atˤ-tˤullaːb-u   ðahab-uː
          the-student.PL.M-NOM go.PST-3PL.M
          'The students left.'   (Benmamoun 2000: 95)

      b. atˤ-tˤullaːb-u   lam   ya-ðhab-uː
          the-student.PL.M-NOM NEG.PST 3-go-PL.M
          'The students did not leave.'   (Benmamoun 2000: 95)

      c. *atˤ-tˤullaːb-u   lam   ðahab-uː
          the-student.PL.M-NOM NEG.PST go.PST-3PL.M
          'The students did not leave.'   (Benmamoun 2000: 96)

Given the standard assumption that tense originates on the functional projection T, there are two possible ways how tense could end up on the verb or on the negation: The verb/negation could move to T (9) or T can lower postsyntactically (cf. Embick & Noyer 2001) to the verb/negation, enabling (11).

If we assume that sentential negation is higher than the base position of the subject in Spec-vP (cf. Zeijlstra 2004), we would expect the word order Neg-Subj-V to be possible without verb movement, contrary to fact, see (13).

(13) *lam   tˤ-tˤullaːb-u   ya-ðhab-uː
      NEG.PST the-student.PL.M-NOM 3-go-PL.M
      'The students did not leave.'   (Benmamoun 2000: 97)

Furthermore, no other elements can intervene between negation and verb, see (14), suggesting that Neg + V is a unit (Benmamoun 2000: 97).[2]

(14) *lam   l-baːriħat   yu-saːfir   xaːlid
      NEG.PST the-yesterday 3SG.M-travel Khalid
      'Khalid did not travel yesterday.'   (Benmamoun 2000: 97)

If sentential negation is indeed base-merged above the vP, then this means that the verb has to move and cannot stay in its base position. This is illustrated in (15).

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[2] This is true of negations that are not marked for agreement. MSA has another negation *lays* which can precede the subject.

(i) lays-a   tˤ-tˤaːlib-u   ya-ktub-u   ʃ-ʃiʕr
     NEG-3SG.M the-student.SG.M-NOM 3-write-SG.M the-poetry
     'The student does not write poetry.'   (Benmamoun 2000: 8)

(15)
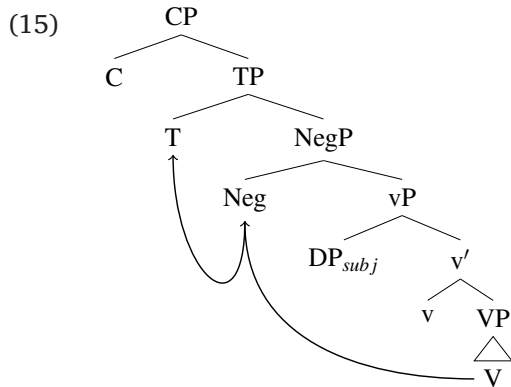
In conclusion, I take the structures in (9) and (10) to be correct: The verb moves to T and the subject can optionally move to Spec-TP.[3,4]

2.4 Empirical generalizations about the agreement asymmetry

Assuming verb movement to T, the table in (16) schematizes the examples from section 2.2.

(16)

Ex.	CP	TP		vP	
(5a)			V-sg		S_{pl}
(5b)			V-sg		S_{du}
(5c)	O_{pl}		V-sg		S_{sg}
(5d)			V-sg	O_{sg}	S_{pl}
(6a)		S_{pl}	V-pl		
(6c)	S_{pl}		V-pl		
(7a)			Aux-sg	S_{pl}	V-pl
(7b)		S_{pl}	Aux-pl		V-pl
*(7c)			Aux-sg		V-sg S_{pl}
(8a)			Aux-pl		V-pl
(8b)	S_{pro-pl}		V-pl		
(8c)			V-pl	S_{pro-pl}	

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[3] Note that Benmamoun (2000: 63) argues that the imperfective form, which is used in present tense, does not move to T. As evidence, Benmamoun (2000) discusses idioms as well as judgments from Arabic dialects. However, this is probably incorrect for MSA as both SV and VS order for present tense are equally good according to my informant.

(i) a. al-ʔawla:d-u   ya-llab-u:-n
         the-boy.PL-NOM   3-play-PL.M-IND
         'The children are playing.'   (Benmamoun 2000: 32)

    b. ya-llab   al-ʔawla:d-u
         3-play   the-boy.PL-NOM

[4] There are alternative analyses for the clause in MSA. See Aoun et al. (1994) for an analysis where the verb is in C and Wurmbrand & Haddad (2014) for an analysis where the verb may stay in the vP. See Alotaibi & Borsley (2013) for an analysis where subject movement is not linked to EPP movement (see section 4.3 for a discussion).

Given the pattern in (16), we can make the following observations (cf. Benmamoun 2000: 128):

(17) a. Number agreement is different from gender and person agreement.
 b. Number agreement is dependent on the linear order of subject and verb.
 c. Number agreement does not require surface adjacency between subject and verb.
 d. Agreement is dependent on the grammatical function of the agreement target: Only subjects can agree.
 e. Number agreement is dependent on whether the subject is a full noun phrase or a pronoun.

Based on the generalization (17), Section 3 introduces a new approach to the agreement asymmetry with the goal to account for all the observations in (17).

3 Analysis

The main idea of the new approach is that number agreement is a process that applies in all the examples we have seen above, that is, also in sentences with VS order. However, number on the verb can get lost in certain configurations. Concretely, I propose that number agreement takes place in the vP domain. The word order is determined later in the TP domain. If the verb moves to T, it may check the EPP property of T (cf. Alexiadou & Anagnostopoulou 1998). If it does, the subject remains in Spec-vP, which results in a surface VS order. But if the verb checks the EPP feature, number on the verb must delete. On the other hand, if the subject checks the EPP property, no deletion applies.

In Section 3.1, I lay out the main assumptions of the new analysis. Section 3.2 shows how the basic pattern in (1) is derived. Finally, Section 3.3 accounts for the more complex cases with *kaana,* wh-subjects, and pronominal subjects.

3.1 Assumptions

The present account is couched within a derivational minimalist framework (Chomsky 1995 et. seq.). Features that trigger the structure-building operations Merge or Move appear in bullets below [•F•], while features triggering Agree appear with an underlined value [F:_] (cf. Sternefeld 2006 for a similar notation). There are four processes that are essential: head movement, EPP movement, agreement, and morphological realization of features. I discuss each of these points in turn.

3.1.1 Head movement

I assume that head movement takes two independent heads and forms a complex head in the syntax (Baker 1988; Chomsky 1993; 1995).[5] In this approach, head movement is triggered by a

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[5] There is an ongoing debate about the nature of head movement in the literature. Proposals range from denying the existence of head movement (e.g. Koopman & Sczabolcsi 2000; Mahajan 2003; Müller 2004b), defining head movement as a non-syntactic PF process (e.g. Chomsky 2000; 2001; Harizanov & Gribanova 2019), reducing head

feature $[_H F_H]$ on the higher head and is thus distinguished from the standard operation Move (cf. Rizzi 2016), which applies in instances of phrasal movement. The head movement configuration is schematized in (18).

(18)   *Head Movement*
$$[_{XP} ... X_{[X, HYH, ...]} [_{YP} ... Y_{[Y, ...]} ...]] \Rightarrow$$
$$[_{XP} ... [_{X, HYH, ... } Y_{[Y,...]}][_{YP} ...]]$$

After Y undergoes head movement to X, X and Y form a complex head in the position of X.[6]

   Additionally to (18), I assume that the complex head X-Y is subject to the deletion process defined in (19). The *Complex Head Feature Deletion* (*COHFED*) operation says that in complex heads, the movement triggering feature as well as the targeted feature are deleted.

(19)   *Complex Head Feature Deletion (COHFED)*
In a complex head [X Y], if X bears an operation-triggering feature [F] and Y bears a matching feature [F], delete [F] on both X and Y.

The implications of COHFED for the structure in (18) are shown in (20).

(20)   *Application of COHFED I*
$$[_{XP} ... [_{X, HYH, ... } Y_{[Y, ...]}][_{YP ...}]] \Rightarrow$$
$$[_{XP} ... [_{X, HYH, ... } Y_{[Y,...]}][_{YP} ...]]$$

In (20), COHFED is responsible for the deletion of the categorial feature of the moved head, which, in this case, is the feature that has been targeted by head movement. Thus, the moved head is impoverished (cf. Lahne 2009; Keine 2010 for instances of syntactic impoverishment, albeit not due to head movement).

   One advantage of COHFED is that it solves a potential labeling conflict between the two heads (Chomsky 2013; 2015). According to Chomsky (2013), Merge is a minimal operation that does not include labeling. Since every syntactic object needs a label, a special labeling algorithm is required. The basic idea of this algorithm is that the label of a complex synactic object is the least embedded head.

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movement to some other syntactic operation, such as Agree (Roberts 2010) or phrasal movement (Matushansky 2006; Harizanov & Gribanova 2019), or assuming that head movement is a special syntactic operation (Baker 2009; Rizzi 2016). If the analysis in this section is correct, head movement must be syntactic, as it can block wh-movement of the subject (see also Lambova 2002; Lechner 2006; Roberts 2010 for evidence that head movement is syntactic). See also Dékány (2018) for an overview of different approaches to head movement.

[6] The main argument brought forward against this structure is that it violates the *Extension Condition* or the *No Tampering Condition.* Consequently, a lot of approaches derive Complex head formation by different means (e.g. Matushansky's 2006 famous m-merger operation) or not at all (see e.g. Citko 2008; Cecchetto & Donati 2010; Harizanov & Gribanova 2019; Harizanov 2019). Alternatively, one can relax the Extension Condition (Richards 1997; Safir 2019) or the No Tampering Condition (Rizzi 2016). This is needed for the present approach as well.

(21)

```
      H(P)
      /  \
     H    XP
          /\
         /__\
          X
```
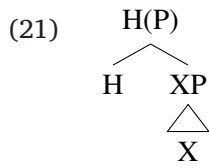
In (21), H becomes the label, because it is not as deeply embedded as X. When two phrases undergo Merge to form {XP, YP}, the label cannot be identified, as there are now two equally embedded heads X and Y. Chomsky (2013) discusses a lot of these constructions, but there are mainly two solutions (both of which are propagated again and again in the labeling literature): Either one of the two phrases moves out (see also Moro 2000; Ott 2012), which leaves the other phrase's head to be the label (22a) or a feature that XP and YP match in becomes the label (e.g. the Q feature of wh-phrases and interrogative CP, see (22b)). (See also Blümel 2017 for an extended discussion and application of both options.)[7]

(22)   a.

b.
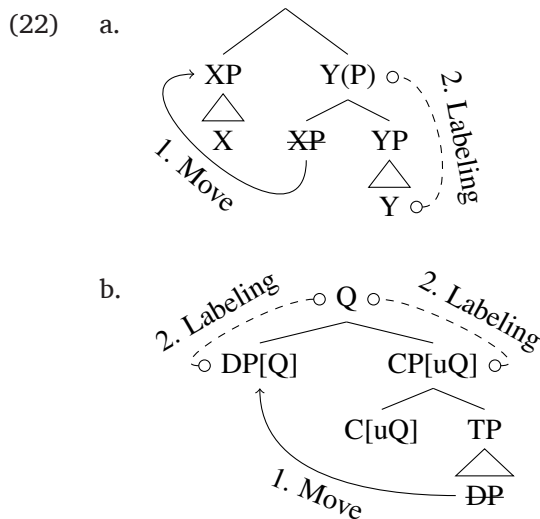
There is another structure that does not fit in the labeling algorithm: {H, H}. This structure occurs at every beginning of a bottom-up derivation. For this case, Chomsky (2013) suggests that the first step in a derivation is Merging a root without a category label with a categorizer. Thus, there is only one possible label for the structure.

Regarding the other potential case, namely complex heads as discussed in this section, Chomsky excludes an adjunction structure as proposed in (18).[8]

The addition of COHFED to head movement creates the needed asymmetry between two heads: After deletion, only the higher head that triggered movement still has a categorial feature.

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[7] A third alternative is one where both heads are able to project to create a complex label, see Citko (2008).

[8] The issue remains unsolved in Chomsky (2015). It is only briefly implied that head movement is not syntactic.

I assume that it is this asymmetry that allows T to project. In this way, COHFED has the same result as phrasal movement in a structure {XP, YP}: The second potential label is removed, leaving a structure with only one possible label.[9]

Finally, I assume that COHFED enforces the deletion of as many features as possible, see (23). In this sense, COHFED is an instance of a "Maximize Satisfaction"[10] principle, which itself follows from the concept of *Earliness* (24) and closest c-command.

(23)   *Application of COHFED II*
$[_{XP} ... [X_{[X, HYH, \bullet F\bullet, ...]} Y_{[Y, F, ...]}]$ $[_{YP ...}]] \implies$
$[_{XP} ... [X_{[X, HYH, \bullet F\bullet, ...]} Y_{[Y, F...]}]$ $[_{YP} ...]]$

(24)   *Earliness* (adapted from Pesetsky 1989; Pesetsky & Torrego 2001; Režać 2003)
An operation-triggering feature must be marked for deletion as early in the derivation as possible.

In contrast to (20), the heads X and Y in (24) have an additional feature [F]: X bears the operation-triggering feature [•F•], while Y bears the goal feature [F]. After head movement, feature $[_H Y_H]$ is checked and deleted. This is the earliest point in the derivation where [•F•] can be deleted, because, after head movement, Y becomes the closest potential checker that X c-commands. So, on X, both $[_H Y_H]$ and [•F•] are deleted and because of COHFED, the corresponding features on Y are also deleted. This is because COHFED does not distinguish between the types of operation-triggering feature.

In Section 3.2, I will demonstrate how this analysis deletes the number feature on the verb in VS structures.

3.1.2 EPP movement

As mentioned in section 2.3, I assume that the SV order in MSA comes about by EPP movement. As for the movement-triggering feature, I propose that in MSA it is a number feature ([•#•]). This feature is independent of number agreement (see Chomsky 1993; Carstens 2005 for the connection of ϕ-features and the EPP) and it is not a category feature like a D feature (as suggested in Chomsky 1995: 232, which developed into the standard view).[11,12]

I suggest that it is this number EPP in MSA that allows the verb to satisfy the EPP. If the EPP feature in MSA were a D feature, it would be unclear why the verb could satisfy it, assuming that

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[9] Many alternative approaches for labeling under head movement assume a form of agreement between the two heads because they share a feature that can serve as the label (see e.g. Roberts 2010; Rizzi 2016).

[10] See (Müller 2016; Driemel & Stojković 2017) for the opposite concept of "Minimize Satisfaction".

[11] I discuss the implications of this assumption in section 5.

[12] Over the years, there have been many proposals for what the EPP feature is. For an overview of the various proposals to the EPP, see Błaszczak (2010); Doner (2019) and references cited therein.

inflected verbs in general do not have nominal properties (but see Alexiadou & Anagnostopoulou 1998 for the assumption that the agreement marker is carrying the D-feature in MSA and Doner 2019: 60ff. for the assumption, that the EPP in MSA attracts a DP). If the EPP feature can be a ϕ-feature, the proposal that verbs can satisfy the EPP property becomes more intuitive because both subject DPs and verbs bear ϕ-features.

Before turning to agreement, one thing about the EPP in MSA should be noted: Surface case is not connected to EPP movement in MSA. Instead it is an independent process. Evidence for this assumption comes from examples where postverbal subjects bear nominative case (25a) and preverbal subjects bear accusative case when they are preceded by the complementizer *ʔinna* ('that') (25b).

(25) a. ʔakal-at/*na   atˤ-tˤa:liba:t-u
          eat.PST-3SG.F/*3PL.F the-student.PL.F-NOM
          'The students ate.'   (Benmamoun 2000: 121)

      b. ʔinna an-nisa:ʔ-a   daxal-na   maka:tib-a = hunna
          that   the-women-ACC   entered-PL.F office.PL-ACC = their.F
          'that the women entered their offices'   (Ackema & Neeleman 2003: 726)

3.1.3 Agreement

As is standard in minimalist frameworks, I assume that agreement results from the application of the syntactic operation Agree (Chomsky 2000). In contrast to the standard definition of Agree, I assume that Agree is allowed to probe upwards (see Wurmbrand 2012; Zeijlstra 2012; Himmelreich 2017; Bjorkman & Zeijlstra 2019). Importantly, I assume that a valued probe does not delete but remains accessible to further operations (Legate 2005; Assmann 2012).

Regarding subject-verb agreement in MSA, I assume that Agree applies in the vP and thus before head movement or EPP movement in the TP domain: v bears a ϕ-probe that finds matching ϕ-features on the subject (cf. Alharbi 2017; Albaty & Ouali 2018; Albaty 2019: 289 for the idea of a low agreement probe).

Evidence for this comes from exhaustive control constructions, which show clear signs of restructuring in MSA in the sense of Wurmbrand (2001). These verbs like *ħawala* ('try') or *nasia* ('forget') take a non-finite untensed control clause, yet, full agreement can be found on the embedded verb.

(26) ħa:wal-ta   ʔan ta-ʔkul-a   tufaħa.
      try.PST-2SG.M SM   2.M-eat-SG.SBJV apple
      'You tried to eat an apple.'

In (26), the embedded verb *eat* appears in the subjunctive mood, which is required due to the presence of the subjunctive marker *ʔan*. The subjunctive is based on the imperfective stem and

is only distinguished from indicative imperfective by the suffix. Albaty (2019) argues based on various diagnostics that subjunctive non-finite clauses are smaller than TP. In the following, I will summarize four arguments.

First, subjunctive is a form of present tense (Ryding 2005: 608) and is thus incompatible with tense marking. If tense marking is connected to T, then it is reasonable to assume that subjunctive structures are smaller than TP.

Second, the subject cannot be fronted out of finite clauses (27a), while this is possible out of non-finite clauses (27b).[13]

(27) a. *al-walad-a$_1$ yumkinu [?anna t$_1$ ɣa:dar-a   ]
         the-boy-ACC may   that   left-3SG.M
         'The boy may have left.'   (Albaty 2019: 51)

      b. al-walad-u$_1$ yumkinu [?an yu-ɣa:dir-a   t$_1$]
         the-boy-NOM may   SM 3-leave-SG.M.SBJV
         'the boy may leave'   (Albaty 2019: 54)

This contrast gets explained if the subjunctive clause is smaller than a CP.

Third, Cinque (2006) proposes that certain adverbs like *always* cannot appear twice in monoclausal structures (28a). However, different adverbs may occur (28b). Again, this is borne out in the restructuring contexts in MSA.

(28) a. *yumkinu da:?iman [?an ya-drus-a   ?aħmad-u   da:?iman]
         may   always   SM 3-study-SG.M.SBJV Ahmad-NOM always
         Intended: 'Ahmad is always capable of always studying.'   (Albaty 2019: 59)

      b. yumkinu da:?iman [?an ya-drus-a   ?aħmad-u   bijidin   ]
         may   always   SM 3-study-SG.M.SBJV Ahmad-NOM seriously
         'Ahmad is always capable of studying seriously.'   (Albaty 2019: 59)

Finally, voice mismatches are not possible with restructuring verbs.

(29) a. *nasi-a   ?aħmad-u   [?an yu-ħdˤar-a   atˤ-tˤaʕa:m-u.]
         forgot.ACT-3SG.M Ahmad-NOM   SM 3-bring.PASS-SG.M.SBJV the-food-NOM
           Intended: 'Ahmad forgot the food to be brought.'   (Albaty 2019: 204)

      b.* nusi-a   [?an yu-ħdˤir-a   ?aħmad-u   atˤ-tˤaʕa:m-a]
         forgot.PASS-3SG.M   SM 3-bring.ACT-SG.M.SBJV Ahmad-NOM the-food-NOM
           Intended: 'It was forgotten that Ahmad brought the food.' (Albaty 2019: 205)

---

[13] Note that the embedded subject *al-walad-a* in (27a) receives accusative case from the complementizer *?anna*.

Albaty (2019), following Wurmbrand (2001), argues that this is a clear sign that the embedded structure must be small. If true, this suggest that agreement is not carried out on T in MSA, but rather on v.[14]

Lastly, I assume that the object is not accessible to this ϕ-probe. This is either because it is inactive due to abstract accusative case (not morphological accusative case, see Section 3.1.2) or because v has a second ϕ-probe for the object. Nothing hinges on that.

3.1.4 Morphological realization

I assume that functional material (heads and features) is realized postsyntactically. For the sake of concreteness, I assume a standard version of Distributed Morphology (Halle & Marantz 1993) with *Late Insertion* in line with the *Subset Principle* (30).

(30)   *Subset Principle* (Halle 1997)
        The phonological exponent of a Vocabulary Item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

Late insertion means that forms do not play a role in syntax. Rather, the forms are inserted postsyntactically according to the Subset Principle after the syntactic structure is built. The Subset Principle says that a form can be inserted even if it does not encode all features of the respective context. This allows the singular marker to be the default marker, as shown below.

3.2 Proposal

After having laid out the assumptions about head movement, EPP movement, agreement and morphology, this subsection puts the pieces together. The idea of the analysis is the following: Agree between v and the subject is always carried out in the vP, see (31).[15]

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[14] Note that the voice matching condition requires that Voice is separate from agreement in the subjunctive clause. See Section 3.3.1 for an analysis.

[15] Note that for sake of keeping the derivations as simple as possible, I will abstract away from Chomsky's (2013) labeling algorithm. A syntactic object of the kind {XP, {H, YP}} will receive have H as its label. This simplification is not meant to be at odds with the assumptions about labeling presented in section 3.1.1. Rather, it is chosen to make the tree representations easier for the reader.

(31)
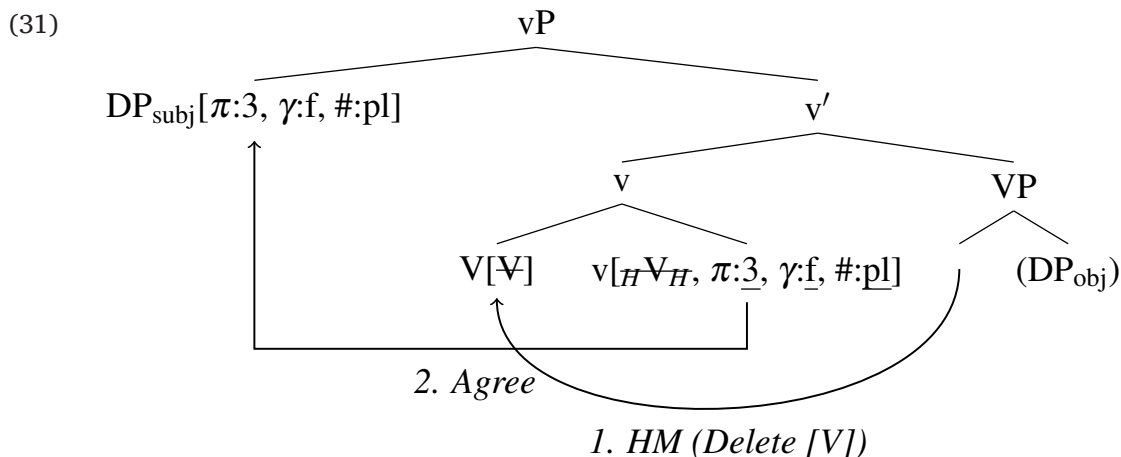
In (31), the verb first head-moves to the functional head v.[16] The complex V + v is built and V loses its V-feature due to an application of COHFED. Afterwards, v Agrees with the subject in person, gender, and number.

After Agree, both v and the subject bear a valued number feature that can be targeted by further operation-triggering features. When T is merged, it has a feature $[_H v_H]$ for head movement of v and an EPP feature [•#•]. At this point, there are two options how the derivation could continue: Either head movement applies first or EPP movement applies first. In the following, I show how these options correspond to the different word orders and agreement patterns.

The first option is a VS order with no number agreement as in (1b), repeated in (32).

(32) ʔakal-at   atˤ-tˤaːlibaːt-u
      eat.PST-3SG.F the-student.PL.F-NOM
      'The female students ate.'   *VS* (Benmamoun 2000: 121)

If head movement of V + v to T is carried out first, COHFED enforces the deletion not only of $[_H v_H]$ on T and [v] on v, but also of [•#•] on T and [#] on v, cf. (23). Additionally, since head movement checks the EPP feature, the subject cannot move to Spec-TP anymore. Thus, early head movement results in a VS order and at the same time, because of COHFED, v loses its [v]-feature and its number feature. This derivation is shown in (33).

---

[16] Chomsky (2015: 15) writes that "[V]-raising is universal in the framework assumed here, and might be syntactic without affecting the status of the other [labeling] cases". Under COHFED nothing special needs to be said about this movement.

(33)
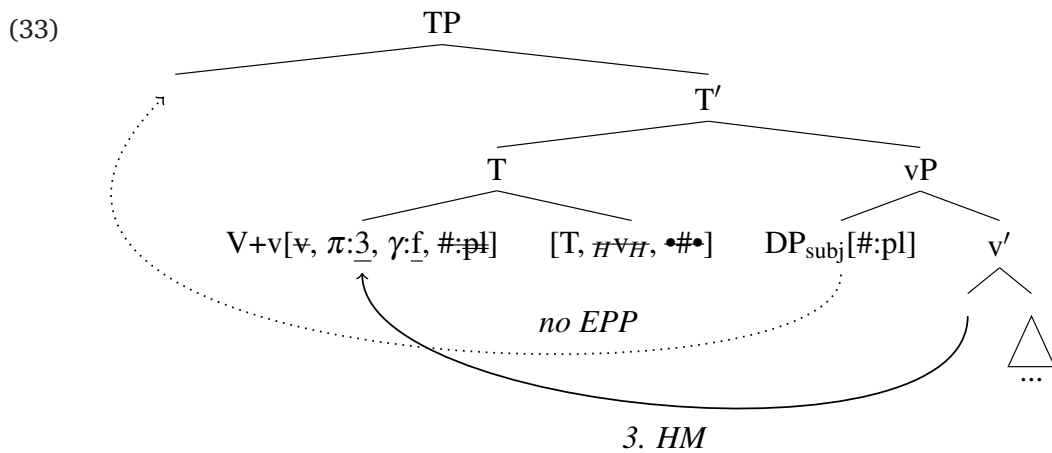
Postsyntactically, the agreement markers need to be inserted. Because of the absence of number, the default (i.e. singular) marker must be inserted. The Vocabulary Items for the agreement suffixes of the perfective verb forms in MSA (which are used in past tense) are given in (34).[17]

(34) *Vocabulary Items for (perfective) ϕ-agreement*

1SG.M/F:	$[\pi{:}1]$	$\leftrightarrow$	/-tu/
2SG.M:	$[\pi{:}2, \gamma{:}m]$	$\leftrightarrow$	/-ta/
2SG.F:	$[\pi{:}2, \gamma{:}f]$	$\leftrightarrow$	/-ti/
3SG.M:	$[\gamma{:}m]$	$\leftrightarrow$	/-a/
3SG.F:	$[\gamma{:}f]$	$\leftrightarrow$	/-at/
1DU/PL.M/F:	$[\pi{:}1, \#{:}pl]$	$\leftrightarrow$	/-naː/
2PL.M:	$[\pi{:}2, \gamma{:}m, \#{:}pl]$	$\leftrightarrow$	/-tum/
2PL.F:	$[\pi{:}2, \gamma{:}f, \#{:}pl]$	$\leftrightarrow$	/-tunna/
3PL.M:	$[\gamma{:}m, \#{:}pl]$	$\leftrightarrow$	/-uː/
3PL.F:	$[\gamma{:}f, \#{:}pl]$	$\leftrightarrow$	/-na/
2DU.M/F:	$[\pi{:}2, \#{:}pl, min]$	$\leftrightarrow$	/-tumaː/
3DU.M:	$[\gamma{:}m, \#{:}pl, min]$	$\leftrightarrow$	/-aː/
3DU.F:	$[\gamma{:}f, \#{:}pl, min]$	$\leftrightarrow$	/-ataː/

Note that the markers used for singular are not specified for number. As such, they can also be inserted if number is missing, that is in (33) and in the cases discussed in section 2.1.[18]

For (33), the marker for 3SG.F would be inserted, see (35).

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[17] There is an allomorphy of verbal agreement markers regarding the two aspects: In the perfective forms, the ϕ-agreement markers are suffixes. In the imperfective forms, the forms consist of a prefix and a suffix. In the following, I will abstract away from these differences, as they do not influence the present approach. See Benmamoun (2000: 20), Ryding (2005: 477) for the entire paradigm of the verb ʔkl ("to eat").

[18] In (34), third person is considered to be the absence of person (Benveniste 1966). Nothing hinges on this. Further, dual is analyzed here as "minimal plural" [#:pl, min].

(35)　　↳ [π:3, ɣ:f] ⇐ [ɣ:f] ↔ /-at/
　　　　↳ [π:3, ɣ:f] ⇐ /-at/

The consequence of this derivation is that it appears as if the verb in a VS clause has not agreed with the subject in number. This concludes the derivation of (32).

Coming to the second option for a derivation, EPP movement is carried out before head movement. The following shows that we end up with an SV order and number agreement as in (1a), repeated in (36).

(36)　at�ˤ-tˤaːlibaːt-u　　　　ʔakal-na
　　　the-student.PL.F-NOM　eat.PST-3PL.F
　　　'The female students ate.'　　　　　　　　　　　　*SV* (Benmamoun 2000: 121)

If EPP movement applies first, the subject, being closer to T than the v head, moves to Spec-TP. At this point, [•#•] on T is deleted, as number on T is not the Agree feature, but a feature triggering movement.[19] Note that no deletion of number happens on the noun since phrasal movement is not subject to COHFED. Thus, syntactic number on the noun is obtained also after movement. Head movement applies after EPP movement, but now, only the features [v]/[$_H$v$_H$] on v and T are subject to COHFED, as the EPP feature has already been checked by the subject.

Consequently, number remains on v and will be realized postsyntactically. This derivation is shown in (37).[20] The Vocabulary Insertion is shown in (38).

(37)

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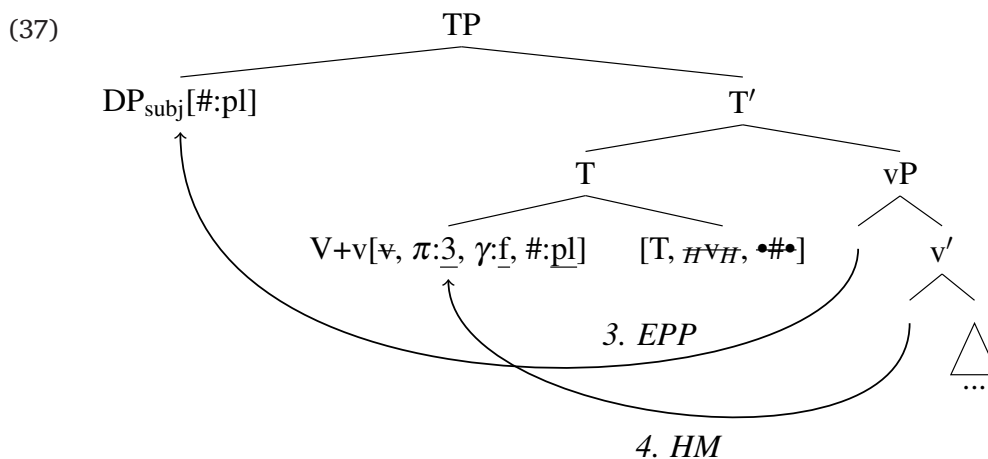
[19] In languages where (number) agreement happens on T, and not on v, we do not expect number to get deleted. The reason is that in this case, T attracts v via the head movement feature [$_H$v$_H$]. Since v does not have number, COHFED cannot maximize deletion to the number feature.

[20] Note that head movement in this derivation violates the *Strict Cycle Condition* (SCC, Chomsky 1973) if every node in the tree constitutes a cycle. Thus, the derivation in (37) is only compatible with a relaxed version of the SCC (cf. Richards 1997), where a cycle is defined, for example, as a phrase.

(38) $[\pi{:}3, \gamma{:}f, \#{:}pl] \Leftarrow [\gamma{:}f, \#{:}pl] \leftrightarrow /\text{-na}/$
        $\hookrightarrow [\pi{:}3, \gamma{:}f, \#{:}pl] \Leftarrow /\text{-na}/$

Finally, scrambling of the object in front of the subject as in (5d) does not necessarily pose a problem for the analysis. Similar to agreement in the vP, one has to assume that the object is not targeted by EPP movement. This might be due to the object being inactive because of Criterial Freezing (Rizzi 2006). Nothing hinges on this.

Before moving on to the more complex cases of agreement asymmetries, I would like to discuss the conditions for SV and VS orders. In the analysis so far, the choice between the two derivations is completely free. This is because the head movement and the EPP feature on T are brought into the derivation at the same time. Assuming that only one operation can apply at once, we end up with the two derivational orders which lead to two different word orders.

(39)   a.   Head movement ≺ EPP movement ⟹ VS order
        b.   EPP movement ≺ head movement ⟹ SV order

If there is no rule in the grammar how the two movement operations are ordered, both orders should be equally possible. Thus, the word order in MSA would constitute a case of true optionality (cf. Biberauer & Richards 2006). Evidence in favor of this is that speakers often find both word orders equally acceptable. Also, Ryding (2005: 66) reports that SVO can be chosen for stylistic (rather than grammatical) reasons. This is also in line with the findings of Parkinson (1981), according to which the usage of SVO in main clauses seems to depend on sociolinguistic rather than grammar rules. In a corpus study he compared the frequencies of SVO orders in main clauses across different genres of writing, see Table (40). Even within a genre we can find great variability, see (41).

(40)   *Frequency of SVO in different genres* (Parkinson 1981: 28)

Genre	% SVO
headlines	92%
political speeches	48%
editorials	39%
short stories	39%
linguistics dissertations	34%
magazines	30%
scholarly journals, political science	27%
news articles	8%

(41)   *Frequency of SVO in types of magazine articles* (Parkinson 1981: 30)

Topic	% SVO
human interest, sports, movies, cars	37%
news shorts, legal, religious, political, serious articles	21%

It does not seem clear how this variability would be explained by any grammar rule, especially given that Parkinson (1981) excluded sentences where one word order was not possible for any grammar-internal reason.

Still, in some cases, the word order is not free. Embedded clauses that start with the complementizer *ʔanna* require SV order, see (42a). Similarly, the particle *ʔinna* ("indeed") can occur sentence-initially and leads to SV order (42b).

(42)   a.   ðakar-a   ʔanna l-ʕarab-a   ʔaʕtˤaw-haː sm-a-haː.
              mention.PST-3SG.M that   the-Arab-ACC gave-her   name-ACC-her
              'He mentioned that the Arabs gave it its name.'   (Ryding 2005: 426)

        b.   ʔinna l-ʔamal-a   taħawwal-at   ʔilaː ʔawhaːm-in.
              indeed the-hope-ACC turn.PST-3SG.F into delusion-GEN.INDF
              'Indeed, the hope turned into delusions.'   (Ryding 2005: 423)

(42) shows that the particles *ʔanna* and *ʔinna* additionally assign accusative to the subject. Thus, these complementizers are case assigners. The data can be derived in the account under the assumption that case assignment can only apply locally. In section 3.3.2, I propose that TP is a phase in MSA. If this is true, then a subject in vP is not accessible to C. Thus, the subject has to move to Spec-TP for case assignment from C, see (43).

(43)   a.   *EPP < HM $\Rightarrow$ SV: Spec-TP can receive case from C*
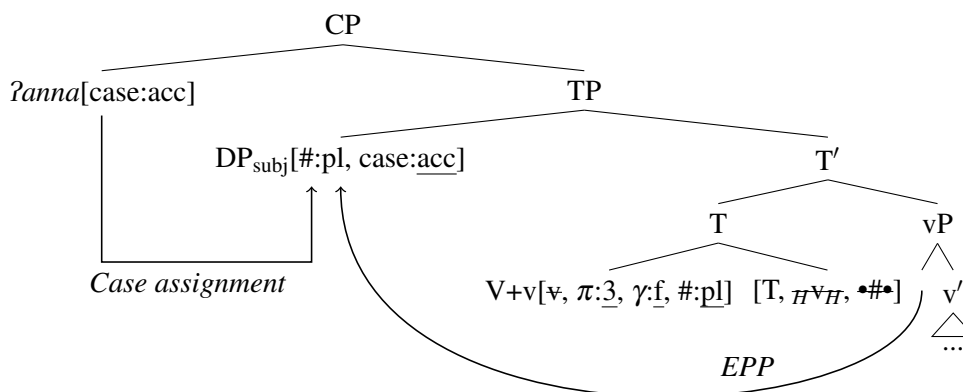
b. *HM ≺ EPP ⟹ VS: Spec-vP cannot receive case from C*

$$\begin{array}{c}
\text{CP} \\
\diagup \qquad \diagdown \\
\text{?anna[case:acc]} \qquad \text{TP} \\
\diagup \qquad \diagdown \\
\text{T}' \\
\diagup \qquad \diagdown \\
\text{T} \qquad\qquad \text{vP} \\
\diagup\diagdown \qquad\quad \diagup \diagdown \\
\text{V+v}[\cancel{\text{v}}, \pi\text{:}\underline{3}, \gamma\text{:}\underline{\text{f}}, \cancel{\text{\#:pl}}] \quad [\text{T, }_H\text{v}_H, {}^\bullet\text{\#}^\bullet] \quad \text{DP}_{\text{subj}}[\text{\#:pl}] \quad \text{v}'
\end{array}$$

no EPP

no Case assignment
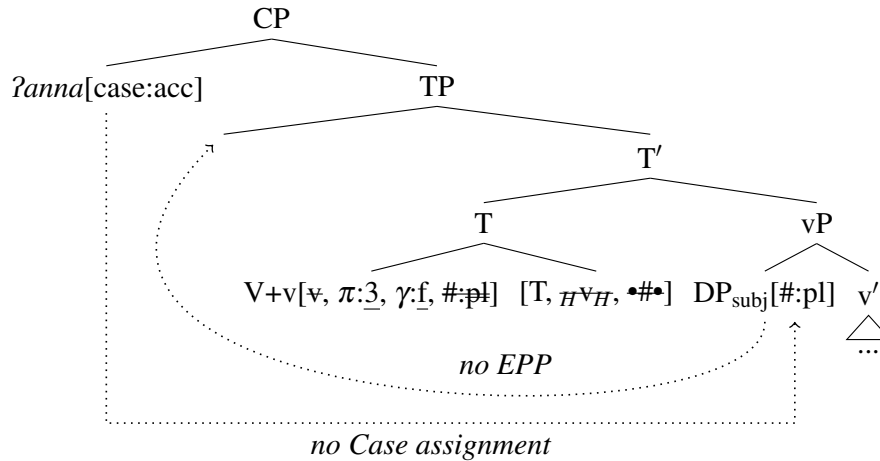
For the derivations in (43), I would like to suggest that the order of operations is free on the TP level. However, it might be that a certain order causes problems for a later step in the derivation.

The final question is whether the interaction of EPP and head movement is the same in every language where the verb can check the EPP feature. In principle, it is possible to restrict the order by ordering statements on T as abstractly depicted in (44).

(44)   a. $T[_H v_H \prec {}^\bullet\text{EPP}^\bullet]$
       b. $T[^\bullet\text{EPP}^\bullet \prec {}_H v_H]$

There can certainly be differences how different languages impose different word order constraints in their grammars. However, for MSA at least (and possibly for spoken Arabic dialects), the choice between SVO and VSO seems to be optional.

3.3 Deriving the full pattern

So far, the analysis is able to derive the basic pattern of the agreement asymmetry. In order to account for the other cases, a couple of minor assumptions need to be added to the main approach. In this subsection, I derive a case where the lexical verb has to stay low, a case where SV is obligatory because the subject undergoes wh-movement or because it is a pronoun.

3.3.1 Two φ-probes in past imperfective

The first case that deserves a closer look is the structure where the past imperfective marker *kaana* appears additionally to the lexical verb. In such clauses, both *kaana* and the lexical verb are marked for agreement. However, what becomes clear from the data in (7), repeated in (45), is that the lexical verb cannot move to T (45c). Instead, *kaana* has the same distribution as the lexical verb in (1), see (45a-b), so it is reasonable to assume that it moves T.

(45)   a.   ka:n-at   / *kun-na   atˤ-tˤa:liba:t-u   ya-ʔkul-na
           be.PST-3SG.F / be.PST-3PL.F the-student.PL.F-NOM 3-eat-PL.F
           'The female students were eating.'

   b.   atˤ-tˤa:liba:t-u   *ka:n-at   / kun-na   ya-ʔkul-na
       the-student.PL.F-NOM be.PST-3SG.F / be.PST-3PL.F 3-eat-PL.F

   c.   *ka:n-at   / *kun-na   *ta-ʔkul   / *ya-ʔkul-na atˤ-tˤa:liba:t-u
       be.PST-3SG.F / be.PST-3PL.F 3SG.F-eat / 3-eat-PL.F   the-student.PL.F-NOM

What is special about *kaana* is that it usually occurs with the imperfective verb form, with the meaning of a past imperfective, see (45). However, it can also occur with the perfective form, yielding a past perfective meaning (46a) and it can be used as a past tense copula (46b). It can even occur as the verb in an exhaustive control construction under a modal verb (46c).

(46)   a.   ka:n-a   l-safi:r-u   (qad) wasˤal-a   masa:ʔ-a
           be.PST-3SG.M the-ambassador-NOM (PTCL) arrive.PERF-3SG.M evening-ACC
           l-dʒumʕat-i.
           the-Friday-GEN
           'The ambassador had arrived Friday evening.'   (Ryding 2005: 448)

   b.   ka:n-a   dʒa:su:s-an.
       be.PST-3SG.M spy-ACC.INDF
       'He was a spy.'   (Ryding 2005: 635)

   c.   la: yumkinu ʔan ya-ku:n-a   ʕarabiyy-an.
       NEG.PRS may   SM   3-be-SG.M.SBJV Arab-ACC.INDF
       'It is not possible that he is an Arab.'   (Ryding 2005: 636)

Further, *kaana* has the same inflection paradigm as lexical verbs and it can occur in all three tenses, past (47a), future (47b), and present (47d). For present tense, note that it can only be overt in generic sentences (Benmamoun 2000: 47), like (47d), but not in (47c).

(47)   a.   kun-tu   mutaʔakkid-an.
           be.PST-1SG certain-ACC.INDF
           'I was certain.'   (Ryding 2005: 635)

   b.   sa-ʔa-ku:n-u   mutaʔakkid-an.
       FUT-1SG-be-1 certain-ACC.INDEF
       'I will be certain.'   (Ryding 2005: 635)

   c.   ʔana: (*ʔa-ku:n) mutaʔakkid-an.
       I   1SG-be   certain-ACC.INDF
       'I am certain.'   (Ryding 2005: 634)

d. ya-kuːn   l-dʒawwu   ħaːrran   fiː   sˤ-sˤayfi
3SG.M-be the-weather hot   in   the-summer
'The weather is usually hot in the summer.'   (Benmamoun 2000: 47)

From these data, I conclude that *kaana* is independent of aspect and tense is not, as claimed by Bjorkman (2011: 63ff.) a combination of past and imperfective.

I would like to propose that *kaana* heads its own verbal projection.[21] As such, it does not have a head movement feature, which means that the lexical verb does not move to *kaana*.

Evidence for this assumption comes from the parallels between past imperfectives and exhaustive control. In Section 3.1.3, I provided evidence that the complements of exhaustive control verbs, which appear in subjunctive conjugation, but with agreement marking, must be small. Especially the ban on voice mismatching suggests that these control complements must be smaller than the head that selects the subject, i.e. the *v* head.

For this reason, Albaty (2019: 201) analyzes the subjunctive marker *ʔan* as a Mood head that marks subjunctive mood on the verb of its VP complement, see (48).

(48)   [$_{VP}$ *may/try/forget* [$_{MoodP}$ *ʔan* [$_{VP}$ V]]]

This mood head carries an agreement probe. However, *ʔan* does not carry any voice feature and cannot select its own subject. I would like to slightly adapt Albaty's (2019) analysis and suggest that *ʔan* selects a subtype of vP (cf. Roberts 2010: 83ff.), which bears an agreement probe but does not select the subject. For this, it depends on the matrix v, which is written as v* in the following derivations (following the notation in Roberts 2010: 44ff.).[22] This modification has the advantage that it easily derives the word order and the morphology inside the MoodP.

Given this assumption, we can examine (47c) again: Here, *kaana* appears in the subjunctive mood as the complement of the exhaustive control verb *yumkinu* ('may') (Albaty 2019: 135), something that would be unexpected if *kaana* were in a higher functional position. (49) shows the structure of (47c) under the assumptions outlined above.

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[21] But see Alharbi (2017) for an analysis where the copula *kaana* is analyzed as a *v* head. In this analysis, I restrict myself to non-copula uses of *kaana*.

[22] Albaty (2019) follows Cinque (2006) and assumes that Voice is a head separate from v.

(49)

```
                              v*P
                   ┌───────────┴───────────┐
        pro[π:3, γ:m, #:sg]               v*′
                               ┌───────────┴───────────┐
                              v*                        VP
                    ┌──────────┴──────────┐       ┌─────┴─────┐
          yumkinu[V̶] v*[ₕV̶ₕ, •D•, π:3,            MoodP
                       γ:m̲, #:sg̲]           ┌──────┴──────┐
                                           ʔan        v_sbjvP
               3. HM (Delete [V])                ┌──────┴──────┐
                                               v_sbjv          VP
                                         ┌──────┴──────┐  ┌────┴────┐
                                yaku:na[V̶] [ₕV̶ₕ, π:3,          DP
                                           γ:m̲, #:sg̲]        ʕarabiyyan
          4. Agree
                         2. Agree          1. HM (Delete [V])
```
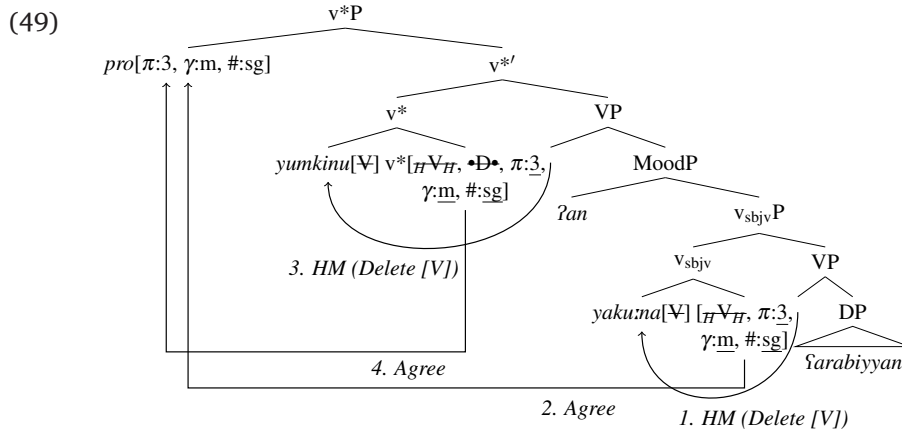
This analysis can be transferred to the past imperfective construction: The tree in (50) shows the base structure that I assume for imperfective clauses containing a verb with an imperfective stem and *kaana*. The main idea is that the past imperfective construction resembles the restructuring control construction, meaning that *kaana* embeds a vP. Again, this vP (called $v_{ipfv}P$[23,24]) is defective and depends on v* for selecting the subject.

(50)

```
                              v*P
                   ┌───────────┴───────────┐
        DP_subj[π:3, γ:f, #:pl]           v*′
                               ┌───────────┴───────────┐
                              v*                        VP
                    ┌──────────┴──────────┐       ┌─────┴─────┐
          ka:na[V̶]  v[ₕV̶ₕ, •D•, π:3,            v_ipfvP
                       γ:f̲, #:pl̲]          ┌──────┴──────┐
                                         v_ipfv           VP
               3. HM (Delete [V])   ┌──────┴──────┐  ┌────┴────┐
                                  V[V̶] v_ipfv[ₕV̶ₕ, π:3,   (DP_obj)
                                            γ:f̲, #:pl̲]
          4. Agree       2. Agree       1. HM (Delete [V])
```

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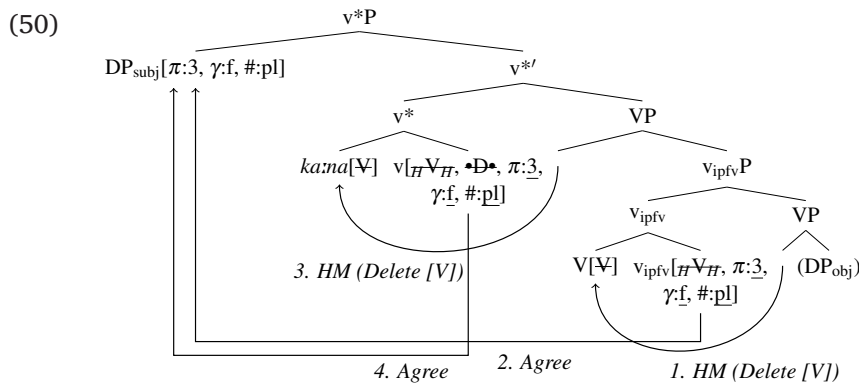
[23] In MSA, verbs are morphologically either built on the imperfective or the perfective stem. Both the imperfective indicative and the subjunctive are built on the imperfective stem, suggesting that there might be more to the structure of subjunctives, with the subjunctive as an independent (v) head: v* > Mood (ʔan) > v_{sbjv} > v_{ipfv}. Since a full analysis is beyond the scope of this paper, I stick to the simpler structure in (48).

[24] A reviewer asked about the possibility of having a general head movement feature instead of specific head movement features for each head. In principle, this could be compatible with the analysis presented here, see (i).

(i) a. *Functional sequence with general head movement features*
         V[H] < v[H, ₕHₕ] < T[ₕHₕ]
     b. *Head movement V to v*
         [ᵥ V[H] v[H, ₕHₕ]] →_COHFED [ᵥ V[H̶] v[H, ₕH̶ₕ]]
     c. *Head movement V + v to T*
         [ᵥ V + v[H] T[ₕHₕ]] →_COHFED [ᵥ V + v[H] T[ₕH̶ₕ]]

Even if the head movement feature has nothing to do with categories, COHFED still makes the correct predictions. Note, however, that in this version we lose the labeling motivation for COHFED, see Section 3.1.1.

In (50), there are two vPs: In the lower v_{ipfv}P, the lexical verb moves to v_{ipfv} and v_{ipfv} Agrees upward with the subject in the v*P. Next, v_{ipfv}P is merged with *kaana*. The *kaana*-VP then merges with the v* head and head movement and Agree with the subject apply. As a result, *kaana* is in the position of v* and the lexical verb is in the position v_{ipfv}.

The structure in (50) explains two things without further ado: First, it is immediately obvious why the subject can never follow the lexical verb: The highest position the verb can get to is v_{ipfv}.

Furthermore, the structure in (50) shows why agreement occurs twice in these structures. Having two v heads means that there are two independent ϕ-probes for agreement.

Having established this structure the agreement asymmetry in (45a)-(45c) follows exactly as explained in section 3.2 – only this time, *kaana* moves to T, not the lexical verb. As a consequence, the lexical verb will always be marked for plural, independent of whether *kaana* precedes or follows the subject.

3.3.2 Wh-subjects

As shown in (6c), repeated in (51), a subject does not have to be in Spec-TP in order to trigger full agreement on the verb.

(51) ʔay-a   atˤ-tˤullaːb   ʔaraf-uː/*-a   al-ʔidʒaːbat-a?
     which-ACC the-student.PL.M knew-3PL.M/3SG.M the-answer-ACC
     'Which students knew the answer?'

This, however, poses a potential problem for the present account: Assuming that movement to CP is triggered by some movement feature [•F•] on C, the derivation in (52) should be possible, contrary to fact.

(52)   a.   *Head movement of v to T: Deletion of the number feature*
            $[_{TP} [V + v[\#] T] [_{vP} DP_{wh}]]$

       b.   *Movement to CP: SV order*
            $[_{CP} DP_{wh} C[•wh•] [_{TP} [V + v[\#] T] [_{vP} t_{DP}]]]$

In (52), the order VS and partial agreement is established in the TP, but later movement of the subject in the CP changes the word order to SV.

The following assumptions need to be added in order to avoid the derivation in (52): First, movement to Spec-CP has to go through Spec-TP in MSA. This might be because TP is a phase (cf. among others Sportiche 1989; Takahashi 1994; Agbayani 1998; Bošković 2002; Boeckx 2003; Müller 2004a; Boeckx & Grohmann 2007; Chomsky 2005; 2008; Richards 2011; Assmann et al. 2015).

Second, I assume that the theory of edge feature insertion and deletion in Müller (2010; 2011) is correct. This theory addresses the insertion of edge features on phase heads, which are needed for successive-cyclic movement (see Chomsky 2001).

In Müller's (2010) theory, edge features must be inserted as long as the phase head still has operation-triggering features and edge features must be discarded right after they are inserted.

Thus, the theory proposes that phase heads do not enter the derivation with edge features. For the prime example of wh-object movement via vP this would mean that at the point when v merges with the VP, it has at least one operation-triggering feature, namely the Merge feature [•D•] for the subject, see (53a). When it still has this feature, an edge feature [EF] can be inserted (53b). This feature must be discarded right away, which means that the object has to move to the vP (53c). Finally, the subject is merged and the vP no longer has operation-triggering features.

(53)   a. *Before EF insertion*
            [$_{v'}$ v[•D•] [$_{VP}$ V wh-object]]

        b. *EF insertion*
            [$_{v'}$ v[EF, •D•] [$_{VP}$ V wh-object]]

        c. *EF movement*
            [$_{v'}$ wh-object v[E̶F̶, •D•] [$_{VP}$ V __]]

        d. *Merge subject*
            [$_{vP}$ subject [$_{v'}$ wh-object v[•D̶•] [$_{VP}$ V __]]]

Adding to this theory of edge feature insertion, I assume that elements that are moved to the specifier of a head H check as many features as possible on H.[25]

With these assumptions in place, a subject has to undergo movement to Spec-TP, if it has to stay accessible for processes outside of TP. Movement to Spec-TP, however, results in full agreement on the verb.

The tree in (54) illustrates why the derivation in (53) is ruled out. It shows the derivation after ϕ-Agree in the vP has applied (steps 1 and 2, see (31)).
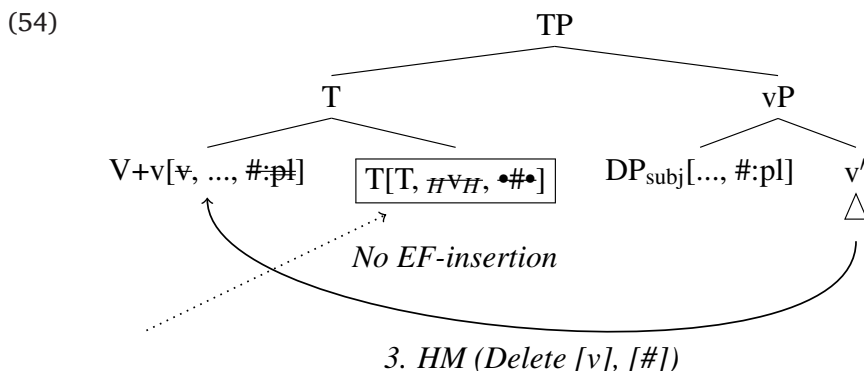
(54)

3. HM (Delete [v], [#])

If head movement is the first operation to apply, all operation-triggering features on T are deleted. In this case, no edge feature can be inserted and the subject stays in the vP. Then, however, it will not be accessible to the C head and the derivation crashes.

So, if a subject has to move to CP, edge feature insertion on T must apply before head movement, resulting in surface number agreement, see (55).

(55)
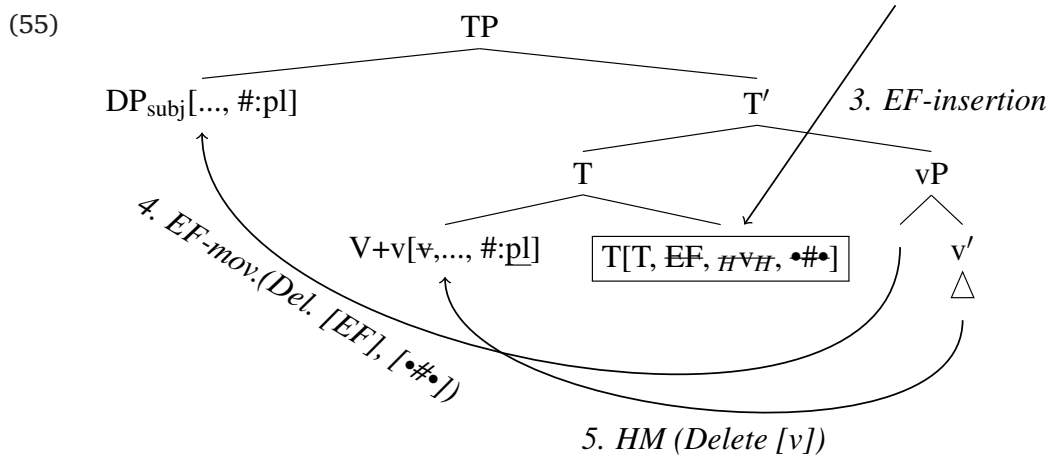
Before turning to pronouns, I would like to discuss some implications of this analysis. The first one regards the assumption that TP is a phase and subsequently has a spot for edge feature movement. This might be considered at odds with Spec-TP being an A-position. To this potential concern, I would like to point out that the necessity of a conceptual A- vs. Ā-distinction has been called into question lately (see e.g. Urk 2015; Keine 2016; Himmelreich 2017; Safir 2019). Rather than having the A/Ā-distinction as a primitive of the theory, these accounts attempt to derive the effects by assuming that the type of feature decides whether something is an A- or Ā-movement. If correct, the traditional A/Ā-distinction does not pose a problem for the account.

Another important consequence of the assumption that TP is a phase is that subject movement to Spec-CP is super local. This would go against theories that assume an *Anti-Locality* constraint that bans exactly such movement, see specifically Spec-to-Spec Anti-Locality in Erlewine (2020) (and references cited therein), given in (56).

(56) *Spec-to-Spec Anti-Locality* (Erlewine 2020: 2)
      Movement of a phrase from the specifier of XP must cross a maximal projection other than XP.

Empirically, Anti-Locality has been claimed to be responsible for a number of subject-related phenomena (see Erlewine 2020), such as *that*-trace effects (57), anti-agreement (58), or the absence of resumptive pronouns for local subject movement (59).

(57) *That-trace effect in Levantine Arabic* (Kenstowicz 1989: 264)

    a. ʔayy fustˁaan$_i$ Fariid kaal innu I-bint ishtarat t$_i$?
       which dress   Farid said that the-girl bought
       'Which dress did Farid say that the girl bought?'

    b. *ʔayy bint$_i$ Fariid kaal innu t$_i$ ishtarat l-fustˁaan?
       which girl Farid said that   bought the-dress
       'Which girl did Farid say that bought the dress?'

(58) *Anti-agreement in Fiorentino* (Brandi & Cordin 1989: 124f.)
    Quante   ragazze *le hanno / gli ha   parlato con te?
    How many girls   3PL have.3PL   3SG.M have.3SG spoken with you
    'How many girls spoke with you?'

(59) *Absence of resumptive pronouns in Hebrew* (Borer 1984: 220)

    a. ha-arie [$_{RelC}$ e= (*hu) taraf   et   ha-yeled]
       the-lion   that 3SG.M devoured ACC the-boy
       Lit.: 'the lion that he devoured the boy'

    b. ha-yeled [$_{RelC}$ e= Rina ohevet (oto)   ].
       the-boy   that Rina loves   ACC.3SG.M
       Lit.: the boy that Rina loves (him)

Anti-Locality is a concept that is incompatible with assuming that TP is a phase. The question therefore is whether there is any sign that Spec-TP-to-Spec-CP subject movement in MSA is considered bad. MSA does not exhibit anti-agreement effects, as shown in (51) above: Subjects in the Spec-CP position show full agreement with the verb.

    Considering *that*-trace effects, the data reported in Erlewine (2020) (given in (58)) are actually incomplete. It is in fact possible to extract a subject from an embedded clause with an overt complementizer, see (60a). It should be noted, however, that this requires the complementizer to have a subject clitic. But this has nothing to do with extraction and is instead an independent property of complementizers, see (60b). They need an overt nominal following it, which bears the accusative of the complementizer (see also the discussion of (42)).

(60) a. ʔayy bint$_i$ Fariid kaal inn=ha   t$_i$ ishtarat l-fustˁaan?
       which girl Farid said that=her   bought the-dress
       Lit.: 'Which girl did Farid say that she bought the dress?'   (Kenstowicz 1989: 264)

    b. Fariid kaal *innu/inn=ha t$_i$ ishtarat l-fustˁaan.
       Farid said that/that=her   bought the-dress
       Lit.: 'Farid said that she bought the dress.'   (Kenstowicz 1989: 264f.)

The pattern in MSA is exactly the same as in Levantine Arabic, see (61).

(61) a. man qa:l-a   ?aħmad ?anna mona ra?-at
        who said-3SG.M Ahmad   that   Mona see.PST-3SG.F
        'Who did Ahmad say that Mona saw?'   (Aoun et al. 2010: 55)

     b.*?ayy-u   bint-in   qa:l-a   ?aħmad ?anna ra?-at   ʕali
        which-NOM girl-GEN.INDF said-3SG.M Ahmad   that see.PST-3SG.F Ali
        'Which girl did Ahmad say that saw Ali?'   (Aoun et al. 2010: 55)

     c. ?ayy-u   bint-in   qa:l-a   ?aħmad ?anna-ha ra?-at   ʕali
        which-NOM girl-GEN.INDF said-3SG.M Ahmad   that-her see.PST-3SG.F Ali
        'Which girl did Ahmad say that she saw Ali?'   (Aoun et al. 2010: 55)

Finally, MSA shows resumptive pronouns for objects in relative clauses (62a), but not for subjects (62b) (and behaves similar to Hebrew in this respect).

(62) a. al-maka:n-u   [_RelC lladhi: ta-qsˤid-u-hu   ] huna:.
        the-place-NOM   REL.SG.M 2-seek-SG.M-him   here
        'The place which you seek (it) is here.'   (Ryding 2005: 324)

     b. al-siyya:ħ-u   [_RelC lladhi:na (*hum) ya-sˤʕil-u:na   kulla yawm-in   ]
        the-tourists-NOM   REL.PL.M them   3-arrive-PL.M every day-GEN.INDF
        'the tourists who arrive every day'   (Ryding 2005: 323)

The question is if this is due to Anti-Locality. If it were, inserting material in between the relative pronoun and the verb in (62b) would enable a subject resumptive pronoun. If a resumptive pronoun still cannot show up, then this asymmetry is most likely not due to Anti-Locality (Erlewine 2020: 2). The latter finding would be compatible with the present approach. The data in (63) suggest that adding material does not help resumptive pronouns.

(63) al-siyya:ħ-u   [_RelC lladhi:na (*hum) kulla yawm-in   (*hum) ya-sˤʕil-u:na
     the-tourists-NOM   REL.PL.M them   every day-GEN.INDF them   3-arrive-PL.M
     (*hum)]
     them
     'the tourists who arrive every day'

The example (62b) serves as a baseline and shows that resumptive pronouns cannot be in the subject position (independent of animacy). In (63), the order is changed and the adverb *kulla yawmin* ('every day') intervenes between the relative pronoun and the verb. Still, no resumptive pronoun can show up. It is simply impossible to have a resumptive pronoun as a subject in relative clauses (see also Aoun et al. 2010: 172). This suggests that Anti-Locality plays no role in MSA. On the other hand, I would like to point out that I do not claim that TP is necessarily a phase in every language. I leave this issue to further research.

3.3.3 Pronominal subjects

Finally, the last case that deserves attention involves pronominal subjects. Crucially, I assume that pronouns in MSA, whether they are null or overt, must move out of TP. Thus, the derivations for the examples in (8), repeated in (64), are equivalent to the derivation in (63) for wh-subjects.

(64) a. kun-na   / *kaːn-at   ya-ʔkul-na
          be.PST-3PL.F / be.PST-3SG.F 3-eat-PL.F
          'They (female) were eating.'

     b. (hum) qaraʔ-uː   ad-dars-a
          they.M read.PST-3PL.M the-lesson-ACC
          'They read the lesson.'

     c. qaraʔ-uː/-*a   (hum-u)   ad-dars-a
          read.PST-3PL.M/*3SG.M they.M-EV the-lesson-ACC

As for null subjects (64a), I follow McFadden & Sundaresan (2016; 2018) and assume that *pro*s must be licensed by an aboutness topic that is in a projection above TP. Thus, *pro* has to move to Spec-TP because it needs to stay accessible.

For overt pronouns, I assume that they must move to a focus projection in the C-domain. As before, movement must go through Spec-TP, leading to full agreement on the verb. Evidence for overt pronouns being related to focus comes from the fact that they are emphatic and have contrastive focus (Soltan 2006, Al-Ghanem, p.c.).

In Arabic, contrastive focus necessarily involves fronting to the sentence-initial position (see Aoun et al. 2010: ch. 8.3 and references cited therein), as shown in (65a) for main clauses and (65b) for embedded clauses.[26]

(65) a. ʃay-an   ʃarib-a   zayd-un   laː   ʕasˤiːr-an
          tea-ACC.INDF drank-3SG.M Zayd-NOM.INDF NEG.PRS juice-ACC.INDF
          'It was tea that Zayd drank, not juice.'   (Aoun et al. 2010: 202)

     b. ʔa-ðunn-u ʔanna fiː badhdaːd-a   ħasˤal-a   l-ʔittifaːq-u
          1SG-think.1 that   in Baghdad-ACC happened-3SG.M the-agreement-NOM
          'I think that in Baghdad, the agreement took place.'   (Aoun et al. 2010: 203)

Note that the order in (65b) suggests that the focus projection is below the CP projection (cf. Rizzi 1997).

A potential problem with the focus fronting analysis is posed by (64c), where the pronoun follows the verb. Note that this is a problem that occurs in most other analyses as well since

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[26] Note that focus movement of constituents other than the subject requires the subject to stay postverbal. Under the present analysis this can be derived if T can only host one specifier. I leave this to future research.

the generalization about the agreement asymmetry is violated. Following Ackema & Neeleman (2003), I assume for overt postverbal subject pronouns that the overt pronoun is just a tonic double for a null (preverbal) focused pronoun.

There are two ways to implement this: Either the null and the overt pronoun are merged independently of each other and the null pronoun is focus-moved (Haegeman 1990), see (66).

(66) $[_{\text{FocP}}$ *pro*$_{\text{foc}}$ ... $[_{\text{TP}}$ read$_{\text{3PL.M}}$ $[_{\text{vP}}$ hum$_{\text{3PL.M}}$ $<$*pro*$_{\text{foc}}>$ the lesson]

Alternatively, one could pursue a big-DP analysis, where the subject pronoun is understood as a clitic to a null DP (see Uriagereka (1995); Arregi & Nevins (2012) and references cited therein) which moves and leaves the clitic behind, see (67).

(67) $[_{\text{FocP}}$ *pro*$_{\text{foc}}$ ... $[_{\text{TP}}$ read$_{\text{3PL.M}}$ $[_{\text{vP}}$ $[_{\text{FP}}$ hum$_{\text{3PL.M}}$ F $<$*pro*$_{\text{foc}}>$] the lesson]

For our purposes nothing hinges on which alternative is chosen. I leave this issue for future research.

4 Previous analyses

Agreement asymmetries in MSA have received a lot of attention over the last three decades. There are two types of accounts that have been proposed so far: First, there are syntactic analyses that assume that in certain configurations, number agreement does not arise to begin with. Second, there are morphological analyses, which argue that number agreement always applies, but that it is disguised by postsyntactic processes that rely on linear order and adjacency.

In Section 3, I have developed a new approach that combines core ideas of both types: Like in morphological analyses, number agreement is modeled as a regular syntactic process, which applies early in the derivation, but is manipulated by later processes. Like in syntactic analyses, operations that affect number agreement are entirely syntactic. Morphological processes do not play a role at all. In this section, I will go into some detail about the type of theories proposed so far in the literature and compare them to the present analysis with respect to their empirical coverage.

Section 4.1 discusses previous syntactic analyses, Section 4.2 morphological accounts. Finally, Section 4.3 addresses a more general question, namely whether preverbal subjects in MSA can be in Spec-TP at all.

4.1 Syntactic analyses

Syntactic analyses can be divided into two subtypes: Analyses that assume a derivational relation between SV and VS and analyses that do not assume such a relation. As for the first type, it has been proposed that either VS is derived from SV (Aoun et al. 1994; Wurmbrand & Haddad 2014)

or that SV is derived from VS (Kobayashi 2013; Bjorkman & Zeijlstra 2014; Preminger & Polinsky 2015; Fakih 2016). Each theory ultimately derives the agreement asymmetry from an interaction of movement and agreement processes in such a way that number agreement comes about when there is an SV structure, while number agreement is impossible in a VS order.

To illustrate such an approach, (68) provides an abstract structure.

(68)
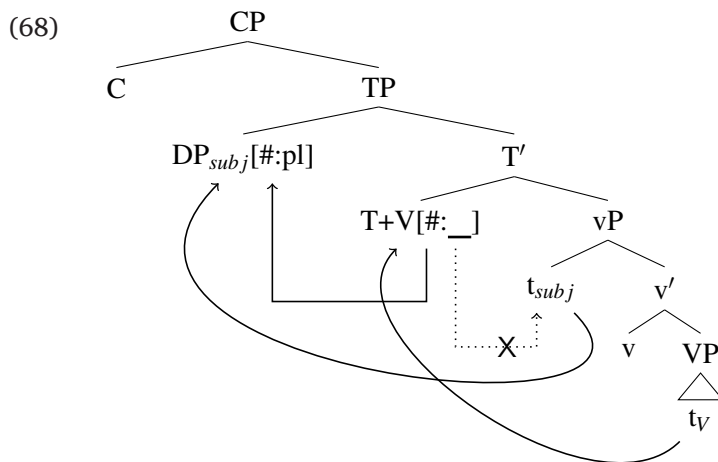
In (68), T bears the probe for number agreement. The assumption is that T can only Agree with the subject in Spec-TP. The problem with this approach is that it cannot rule out the *kaana*-construction in (69), where the subject follows the lexical verb.

(69) *kaːn-at   / *kun-na   *ta-ʔkul / *ya-ʔkul-na atˤ-tˤaːlibaːt-u
      be.PST-3SG.F / be.PST-3PL.F 3SG.F-eat / 3-eat-PL.F   the-student.PL.F-NOM
      'The female students were eating.'

For accounts which assume that number agreement must happen on T, the two agreement markings in (69) require two T-heads in the structure, as depicted in (70).

(70)   [_TP Subj T + *kaːna*[#:__] [_TP t_subj T + V[#:__] t_subj]]

The problem with (70) is that it would predict that there should be a subject position following the lexical verb, contrary to (69). Note that we do find this postverbal position in real biclausal structures like (71).

(71) qurrir-a   [ʔan yu-ħdˤir-a   ʔaħmad-u   atˤ-tˤaʕaːm-a]
      decided.PASS-3SG.M   SM 3-bring-SG.M.SBJV Ahmad-NOM the-food-ACC
      'It was decided for Ahmad to bring the food.'   (Albaty 2019: 205)

Thus, such accounts would have to explicitly rule out the right-most subject position. In the approach presented in Section 3 this follows without further ado.

Shifting the number probe to v (or adding an additional low probe for the imperfective lexical verb, similar to the proposal in Section 3.3.1) would not help these approaches either: Then the connection between number agreement and word order would be lost. Alternatively, a monoclausal analysis with only one agreement probe would have to add further assumptions about the double agreement marking.

Similar problems occur in theories that do not assume a derivational relation between SV and VS. These theories generally suggest that one of the two structures (VS or SV) involves a null pronoun (or a null expletive) which is the actual target of agreement. If *pro* is assumed to be in the preverbal position (Mohammad 1990), it is defective for number agreement. If *pro* is postverbal (Soltan 2006; Al-Horais 2012; Alotaibi & Borsley 2013), it is the only possible target for number agreement.

Let us assume the analysis of *kaana* as proposed in Section 3.3.1 and let us further assume that full agreement happens with a *pro* in Spec-vP, with the coindexed subject in a position above vP. Then, we would need to add an assumption, why the lexical verb fully agrees with either *pro* or the subject, but T can only fully agree with *pro*. The same problem obtains for accounts, where *pro* in Spec-TP is the target for defective agreement. Why does it fully agree with the lexical verb, but not with T?[27]

This brief discussion identifies the crucial problem of previous syntactic approaches: All of them run into a problem with *kaana*-constructions: It is not clear why *kaana* and the lexical verb differ. Assumptions would need to be added to derive the full pattern, while it follows in a fairly straightforward way in the present account.[28]

4.2 Morphological analyses

Morphological analyses also come in two types. The first type assumes that the number feature is deleted under adjaceny in VS order: After full syntactic agreement, the number feature is targeted for some deletion process in a VS order if the number feature on the respective verbal head is close enough to the subject (Benmamoun 2000; Ackema & Neeleman 2003). This is illustrated in (72).

(72) a. *Syntax*:
          $[_{TP}\ T + V[\#:\underline{pl}]\ Subj[\#:pl]\ ...\ ]$

      b. *Post-syntax*:
          $[_{TP}\ T + V[\#:\sout{pl}]\ Subj[\#:pl]\ ...\ ]$

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[27] Note that biclausal structures again predict the impossible subject position after the lexical verb.

[28] Note that Kobayashi (2013) does not have the same problem since movement of the subject is not a prerequisite for agreement in this approach. However, the theory has to assume that the number feature is not visible to the verb if the subject is postverbal, while number is visible for agreement, if the subject is preverbal (cf. Bahloul & Harbert 1992; Harbert & Bahloul 2002). Ultimately, such approaches have the difficulty of getting the timing of agreement right – a difficulty the present approach does not face.

In the second type of morphological approach, number agreement is not syntactic to begin with: It requires a postsyntactic matching process under adjacency (Walkow 2010).

(73) a. *Syntax*:
          [$_{TP}$ Subj[#:pl] T + V[#:_] ...]

      b. *Post-syntax*:
          [$_{TP}$ Subj[#:pl] T + V[#:pl] ...]

While morphological analyses can in principle overcome the problem with auxiliary structures that syntactic accounts have, they have another fairly obvious problem: In general, they cannot derive cases where number agreement is deleted (or comes about) and the verb and the subject are not adjacent. (74) illustrates that neither the postverbal subject (74a) nor the preverbal subject (74b) has to be adjacent to the verb.

(74) a. ʔakal-a   at-tuffaːħata   al-ʔawlaːd-u
          eat.PST-3SG.M   the-apple   the-boy.PL-NOM
          'The children ate the apple.'   (Benmamoun 2000: 132)

      b. al-siyyaːħ-u   [$_{RelC}$ lladhiːna (*hum) kulla yawm-in   (*hum) ya-sˤil-uːna
          the-tourists-NOM   REL.PL.M them   every day-GEN.INDF   them   3-arrive-PL.M
          (*hum)]
          them
          'the tourists who arrive every day'

In (74a) the object *at-tuffaaħata* ('the apple') intervenes between the verb and the postverbal subject. In (74b), the intervener is the adverb *kulla yawmin* ('every day').

A second concern for the morphological analyses is that, in general, it is more difficult to model the importance of the grammatical function under a morphological, surface-oriented approach.

To conclude, previous approaches suffer from problems and difficulties that the present approach does not have.

4.3 EPP movement in MSA?

Approaches like Soltan (2006) and Alotaibi & Borsley (2013) try to show that a preverbal subject is a topic and is not in Spec-TP. Based on examples such as (75) (see also Ayoub 1981; Aoun et al. 2010), they argue that the preverbal subject can only be definite.

(75) a. al-ʔawlaːd-u   dʒaːʔ-uː
          the-boy.PL-NOM   came-3PL.M
          'The children came.'   (Alotaibi & Borsley 2013: 9)

b. *ʔawla:d-un   dʒa:ʔ-u:
   boy.PL-NOM.INDF came-3PL.M
   'Children came.'   (Alotaibi & Borsley 2013: 10)

However, the status as a topic is not necessary for a preverbal subject. Negative indefinites, like *nobody* can be preverbal, even though they cannot be topical (Aoun et al. 2010: 199), see (76).[29] Note that *laa* functions as a constituent negation in these contexts (Benmamoun 2000: 96).

(76)   La: ʔaħad   ʔakal-a   at-tuffa:ħa
        NEG somebody eat.PST-3SG.M the-apple
        'Nobody ate the apple.'

Additionally, as shown in Section 3.3.3, focused elements can be preverbal as well. I conclude that since there seems to be no clear information-structural status of the preverbal subject, subjects in TP cannot be generally excluded. Given this, an approach that is based on EPP movement of the subject seems to be valid. Of course, this does not exclude subjects from additionally moving to a higher focus or topic position. See Section 3.3.2 for a discussion.

5 Verb movement, EPP, and COHFED in other languages

After having discussed the implication of COHFED for MSA in detail and after having presented the advantages of this analysis, the final question is, what COHFED and the idea of ϕ-EPP languages means for other languages. Given the assumptions introduced in Section 3.1, we would expect that COHFED is a universal operation, while the exact EPP-feature is language specific. In principle, we could find the following cross-linguistic variation:

(77)   a.   no EPP: The language has no EPP property.
       b.   [D]: The verb cannot check the EPP, but any noun phrase might. There are no agreement asymmetries.
       c.   [nom]: The verb cannot check the EPP, only nominative noun phrases can. There are no agreement asymmetries.
       d.   [X]: A verb or a noun phrase can check the EPP. There are no agreement asymmetries.
       e.   [ϕ]: A verb or a noun phrase can check the EPP. Agreement asymmetries w.r.t. all ϕ-features occur.
       f.   [#]: A verb or a noun phrase can check the EPP. Agreement asymmetries in number occur.
       g.   [π]: A verb or a noun phrase can check the EPP. Agreement asymmetries in person occur.
       h.   [γ]: A verb or a noun phrase can check the EPP. Agreement asymmetries in gender occur.

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[29] Negative quantifiers are standardly assumed not to be able to function as topics (see e.g. Rizzi 1997).

In this section, I discuss the part of the typology were a verb can check the EPP feature (77d-h). I start with a discussion of Arabic dialects that do not exhibit the agreement asymmetry of MSA, but are quite similar in other respects. Next, I move to (77e) and suggest that lack of agreement as observed in Conegliano might be explained if the EPP is [ϕ]. Finally, I will turn to a discussion of (77g-h) and look whether there are agreement asymmetries, where only person or only gender is affected.

5.1 No agreement asymmetry

The agreement asymmetry with number is a special property of MSA. Modern Arabic dialects, on the contrary, do not show this asymmetry, as shown in (78)–(80).

(78) *Moroccan Arabic*   (Benmamoun 2000: 121)

    a.   kla-w   lə-wlad
          eat.PST-3PL the-children

    b.   lə-wlad   kla-w
          the-children eat.PST-3PL
          'The children ate.'

(79) *Lebanese Arabic*   (Aoun et al. 1994: 196)

    a.   Neem-o   lə-wlaad
          sleep.PST-3PL the-children

    b.   Lə-wlaad   neem-o
          the-children   sleep.PST-3PL
          'The children slept.'

(80) *Syrian Arabic*

    a.   el-sseby-an ʕam   y-erkud-u
          the-boy-PL   PROG 3.M-run-PL

    b.   ʕam   y-erkud-u   el-sseby-an
          PROG 3.M-run-PL the-boy-PL
          'The boys are running.'

Yet, these dialects have a lot in common with MSA, when it comes to the overall grammar and clause structure.[30] So, how do verb movement and EPP interact in these dialects? I suggest that the EPP in the dialects is not [#], but a general, category neutral EPP feature, labeled here as [X].

    Starting with the vP, I assume that the processes are identical to MSA. That is, v agrees with the subject in all ϕ-features, shown in (81).

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[30] Some important differences concern the absence of case markers and the greater flexibility for word orders.

(81)

$$\text{vP}$$

DP$_{subj}$[π:3, γ:f, #:pl]   v′

v   VP

V[$\cancel{V}$]   v[$_H$V$_H$, π:3, γ:f, #:pl]   (DP$_{obj}$)

2. Agree

1. HM (Delete [V])
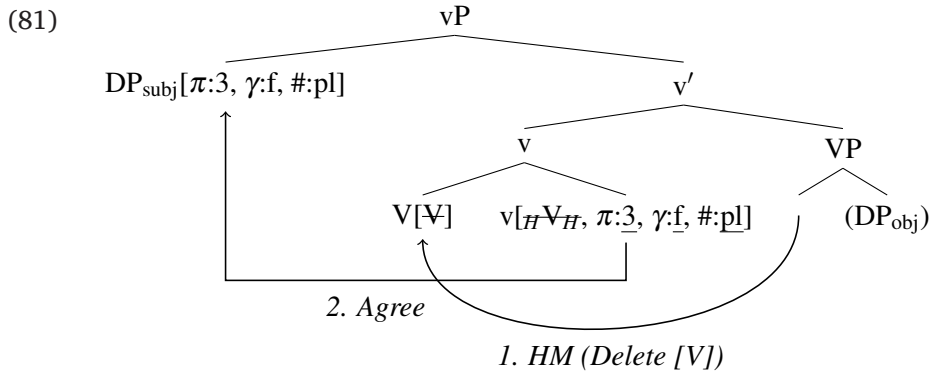
In the next step, T is merged. T carries a categorial EPP feature [•X•] which can be satisfied by either a DP or the head v + V. The structure in (82) shows what happens if head movement is carried out before EPP movement.

(82)

$$\text{TP}$$

T′

T   vP

V+v[$\cancel{v}$, π:3, γ:f, #:pl]   [T, $_H$v$_H$, •X•]   DP$_{subj}$[#:pl]   v′

...

no EPP

3. HM
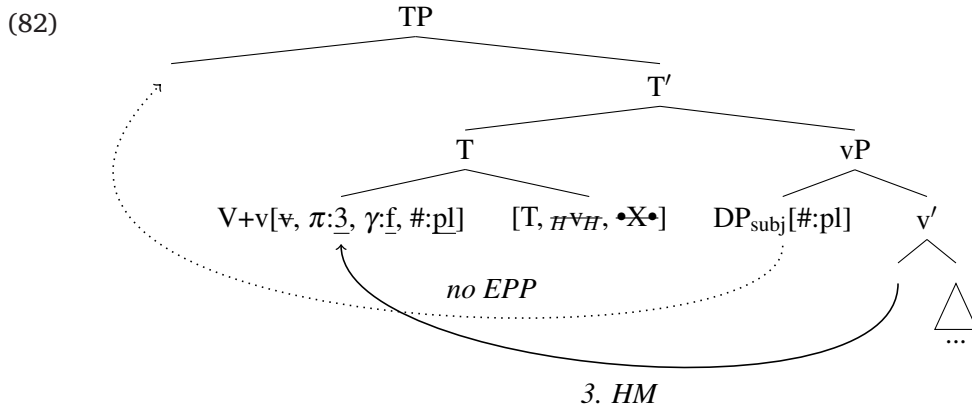
Like in MSA, head movement feeds COHFED. Therefore, not only the head movement feature [$_H$v$_H$] on T is deleted, but also the EPP feature [•X•].[31] Importantly, the number feature on v is not deleted and number agreement shows up under VS order.

5.2 Total agreement asymmetry

Next, we can turn to cases of total loss of agreement. An example from Conegliano is shown in (83).[32]

(83)   *Conegliano (Northern Italian)*
   a.   La   Maria   *(la)   riva
        the   Maria   3SG.F   arrive

---

[31] Note that this derivation requires that the deletions of features do not happen sequentially, but instead simultaneously. This way, two features can get deleted on T, but only one on v.

[32] Note that this phenomenon is prevalent in Northern Italian (see Saccon 1993; Manzini & Savoia 2002; Samek-Lodovici 2002).

b. (*La) riva   la Maria
    3SG.F arrive the Maria
    'Maria arrives.'   (Samek-Lodovici 2002 based on Saccon 1993)

In (83a), the subject precedes the verb and an agreeing clitic shows up. In (83b), the subject follows the verb and the agreeing clitic is out. While for some dialects, there is evidence that also subjects in higher positions cannot cause agreement (see wh-movement in Fiorentino in (58)), there is evidence for Conegliano that extraposed subjects can cause agreement (Saccon 1993).

(84) a. La   e rivada ieri,   la Maria
          3SG.F is arrived yesterday the Maria

      b. *La   e rivá,   la Maria ieri
          3SG.F is arrived the Maria yesterday
          'Maria has arrived yesterday.'   (Saccon 1993: 111)

On the basis of intonation patterns, Saccon (1993) concludes that the subject is extraposed in (84). Given this, (84) shows that the extraposed subject has to follow a high adverb like *ieri* ('yesterday').[33] Since *ieri* is a temporal adverb, it seems reasonable that it is located higher then vP, probably TP. Now, if agreement is a signal for the subject to have reached Spec-TP in the derivation, then we can conclude that extraposition must happen after movement to Spec-TP, as illustrated in (85).

(85) a. *No agreement if subject remains in Spec-vP (83b)*
          $[_{TP}$ T+V $[_{vP}$ Subj … $]]$
      b. *Agreement if subject moves to Spec-TP (83a)*
          $[_{TP}$ Subj Cl$_{agr}$-T+V $[_{vP}$ t$_{subj}$ … $]]$
      c. *Agreement if the subject is extraposed (84a)*
          $[_{CP}$ $[_{TP}$ t$'_{subj}$ Cl$_{agr}$-T+V $[_{vP}$ t$_{subj}$ … $]]$ Subj $]$

If (85c) is correct and the subject has to move through Spec-TP to its extraposed position, this would suggest an analysis similar to the one for wh-movement in MSA (see Section 3.3.2). The only difference would be that the EPP feature is [ϕ] in Conegliano, that is, all ϕ-features are deleted if the verb checks the EPP, and all are retained, if the subject checks the EPP.

5.3 Agreement asymmetries for person and gender

Finally, I briefly discuss the possibility of agreement asymmetries for the other ϕ-features person and gender.

As for person, it is unlikely to encounter a language with an agreement asymmetry in person because first and second person subjects are pronouns. In order to confirm a person agreement

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[33] Saccon (1993: 112ff.) discusses in more detail why the adverb *ieri* has to be high.

asymmetry, a language has to allow verbs to check the EPP and must not be pro-drop. If there is a connection between these two properties, as Alexiadou & Anagnostopoulou (1998) suggest, this type might not exist for independent reasons.

But gender agreement asymmetries should exist (especially in absence of a number agreement asymmetry). There is potential evidence from Rhaeto-Romanic dialects. Samek-Lodovici (2002) claims that in Fassan, Genoese, Ampezzan, and Romagnol, gender agreement with postverbal subjects never occurs. Number agreement, on the other hand, is claimed to be retained, unless the subject is feminine. Then, number agreement can disappear optionally. (86) exemplifies this for Fassan (for the other dialects, see Haiman & Benincá 1992: 177f.).

(86) L   e venu   la vivano
      3SG.M is come.M.SG the fairy.F.SG
      'The fairy has arrived.'   (Fassan, Haiman & Benincá 1992: 176)

As shown in (86), a masculine clitic shows up if the feminine subject follows the verb.[34]

Finally, I would like to point out that the prediction of a gender agreement asymmetry is not idiosyncratic to the present approach. Any approach of MSA that does not assume a universally special status of number (as opposed to gender and person) would predict the existence of languages which are like MSA except that they lack gender agreement with postverbal subjects, and not number agreement. In that sense, the present approach does not fare better or worse then these approaches.

6 Conclusion

In this paper, I have argued for a new approach to the agreement asymmetry in Modern Standard Arabic. The data can be summarized in five empirical observations repeated in (87).

(87) a. Number agreement is different from gender and person agreement.
      b. Number agreement is dependent on the linear order of subject and verb.
      c. Number agreement does not require surface adjacency between subject and verb.
      d. Agreement is dependent on the grammatical function of the agreement target: Only subjects can agree.
      e. Number agreement is dependent on whether the subject is a full noun phrase or a pronoun.

These observations are derived by the following assumptions: Verbs in MSA undergo obligatory head movement to T and can optionally check the EPP number feature on T. If they do, the

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[34] Samek-Lodovici (2002) bases the claim that gender is more affected than number on Haiman & Benincá (1992). However, I have not been able to find respective data or a quote in Haiman & Benincá (1992). As such, it still needs to be confirmed whether the data in (86) really show a gender agreement asymmetry or a total agreement asymmetry. I leave this issue to further research.

subject remains in its base position in the vP and at the same time, the number feature on the verb (which has resulted from previous Agree with the subject) is deleted (due to *Complex Head Feature Deletion*). If the verb does not check the EPP feature, the subject can move to the preverbal position and the verb retains its number feature.

(87a) is due to number, but not gender or person being the EPP feature in MSA. (87b) follows because preverbal subjects move to Spec-TP before the verb, which rescues number on the verb. (87c) naturally follows because there is no process that requires linear adjacency. (87d) follows from the assumption that the object is not an active goal either for agreement or for EPP movement. Finally, (87e) is due to the assumption that pronouns, in contrast to full noun phrases, undergo obligatory movement to Spec-TP.

Finally, I suggested that the present account can also handle other cases of agreement asymmetries (EPP is gender or ϕ as a whole) as well as the absence of agreement asymmetries (EPP is not ϕ-related).

Lastly, it should be mentioned that the agreement pattern in MSA is even more complicated than described in this paper once coordination (Aoun et al. 1994) and raising (Wurmbrand & Haddad 2014) are taken into account. It is well known that MSA is a language that has closest conjunct agreement and that it is a backward raising language. These topics, however, are beyond the scope of the present paper.

Abbreviations

1/2/3	=	1st/2nd/3rd person
#	=	number
ɣ	=	gender
π	=	person
ACC	=	accusative
ACT	=	active
AGR	=	agreement
CL	=	clitic
COHFED	=	Complex Head Feature Deletion
COMP	=	complementizer
DU	=	dual
EPP	=	Extended Projection Principle (feature)
EV	=	emphatic vowel
F	=	feminine
FOC	=	focus
FUT	=	future
GEN	=	genitive
HM	=	head movement
IND	=	indicative
INDF	=	indefinite
M	=	masculine
MIN	=	minimal
MSA	=	Modern Standard Arabic
NEG	=	negative
NOM	=	nominative
OBJ	=	object
PASS	=	passive
PERF	=	perfect
PL	=	plural
PRO	=	pronoun
PROG	=	progressive
PRS	=	present
PST	=	pst
PTCL	=	particle
REL	=	relative (pronoun)
SBJV	=	subjunctive
SG	=	singular
SM	=	subjunctive marker
SUBJ	=	subject
SV	=	subject verb order
VS	=	verb subject order

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