

# A Probe-Goal Approach to Impoverished Agreement

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## 1. Introduction

In some languages, preverbal subjects and postverbal subjects show an asymmetry with respect to the richness of agreement with finite verbs: Only the latter triggers what I call *impoverished agreement*, which means that  $\phi$ -feature agreement is somewhat incomplete. This paper deals with the following two cases of impoverished agreement: Partial agreement and first conjunct agreement. For the first case, consider the following examples from Standard Arabic (Fassi Fehri 1993). While the preverbal subject triggers full  $\phi$ -feature agreement (1), the finite verb agrees with the postverbal subject only for person and gender, not for number (2).

- |   |  |             |
|---|--|-------------|
| (1) l-muʕallim-uum<br>the-teacher-pl.M.NOM<br>“The teachers ate.”         | ʔakaluu/*ʔakala<br><b>ate.3pl.M/*ate.3sg.M</b> | Pre-V-Subj  |
| (2) ʔakala/*ʔakaluu<br><b>ate.3sg.M/*ate.3pl.M</b><br>“The teachers ate.” | l-muʕallim-uum<br>the-teacher-pl.M.NOM         | Post-V-Subj |

The second case is known as *first conjunct agreement*. The example is again from Standard Arabic (Harbert and Bahloul 2002). In (3), the verb is inflected for the entire preverbal coordinated subject, which is specified as dual and default masculine feature. On the other hand, when the coordinated subject appears post-verbally as in (4), the verb agrees with the first conjunct, which ends up with having the 3<sup>rd</sup> person singular feminine form.

- |  |                                |            |
|--|--------------------------------|------------|
| (3) [al-bintu wa ʔal-waladu]<br>the girls and the boy<br>“The teachers ate.” | xaraj-aa<br>left. <b>3du.M</b> | Pre-V-Subj |
|--|--------------------------------|------------|

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\* For valuable comments, I thank Ken Safir, Mark Baker and Jane Grimshaw. I also appreciate the audience of RULing X at Rutgers University for helpful inputs. Any errors are my own.

- (4) *xaraj-at*                      [*al-bintu* wa        <sup>ʔ</sup>*al-waladu*]        Post-V-Subj  
left-3sgF                      **the girl** and        the boy  
“The girl and the boy left.”

In this paper, I propose a novel and unified account for this pre- vs. post-verbal subject agreement asymmetry (henceforth *SV-VS agreement asymmetry*; see Preminger and Polinsky 2015) based on a revised version of Chomsky’s (2000 et seq.) probe-goal theory. This paper is organized as follows: The next section will summarize Chomsky’s probe-goal theory; and based on Bošković (2007) and Kato et al. (2014), I will propose the new probe-goal theory, where not only heads but also phrases can act as probe. In section 3, I will show that the new probe-goal theory can account for the presence/absence of partial agreement in postverbal /preverbal subject constructions in a straightforward way, on the assumption of Carstens’ (2011) internal structure of DP, where  $\phi$ -features are distributed at different heads. Section 4 is devoted for the analysis of first conjunct agreement based on Koppen’s (2007) analysis. Section 5 concludes.

## 2. The probe-goal theory

In this section, based on the ideas in Bošković (2007) and Kato et al. (2014), I propose a revised version of Chomsky’s (2000 et al.) probe-goal system. First, I review Chomsky’s original probe-goal system in 2.1. Then, in 2.2, I overview the ideas presented in Bošković (2007) and Kato et al. (2014). Finally, the new probe-goal theory is presented in 2.3.

### 2.1 Chomsky (2000 et seq.)

Shifting from the early minimalist assumption that all agreement relations are established under the spec-head configuration (Chomsky 1995), Chomsky (2000, 2001, 2004, 2007, 2008) propose that agreement takes place via downward probing by elements which have an *unvalued* and *uninterpretable* feature (henceforth, *uF*; e.g.  $\phi$ -feature on T). In this system, when a head having a *uF* (= probe) is introduced into a derivation, it probes down into its search domain (= c-command domain) and finds an XP which has a matching feature (= goal). When the probe successfully finds its goal, the unvalued features on the probe get valued by the goal.

This downward probing operation, called AGREE, has further conditions on its application. First, a probe P AGREES with the *closest* goal G which has the matching feature with P. If there is another element having a matching feature with P between P and G, P cannot AGREE with G

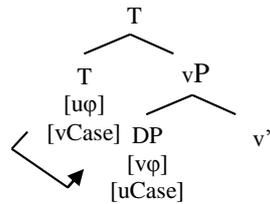
(*intervention condition*). Secondly, this operation is supposed to be the subject to a locality condition based on the notion of *phase*. Chomsky assumes that AGREE cannot take place across phases (*phase condition*). Finally, for an XP to be eligible as a goal, it also has to have an unvalued uninterpretable feature. This is called *activity condition*. Those conditions on AGREE are summarized as (5).

- (5) P with *unvalued uninterpretable* features can AGREE with G iff:
- a. G is in P's c-command domain (*c-command condition*),
  - b. There is no intervening elements having the matching feature with P between P and G (*intervention condition*),
  - c. P and G are in the same phase (*phase condition*), and
  - d. G has an unvalued uninterpretable feature (*activity condition*).

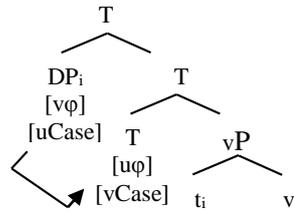
An important role of AGREE in this system is that it “removes uninterpretable features from the narrow syntax, allowing derivations to converge at LF” via feature valuation (Chomsky 2001: 3). It is also assumed that the removal of uninterpretable features has to be done as soon as a head with an uninterpretable feature is introduced into the derivation. Thus, in this version of probe-goal system, it is always *heads* with *unvalued* and *uninterpretable* features that initiate the probing operation. For goals, the activity condition (5d) states that they also have to have an unvalued uninterpretable feature. Suppose T with unvalued/uninterpretable  $\phi$ -feature to be a probe, for example. Its goal, in most cases, is the subject. Therefore, it is assumed that the subject also has some unvalued/uninterpretable features. Chomsky assumes that it is unvalued/uninterpretable Case-feature. He also argues that T has nominative Case value, which is assigned to the goal DP. Therefore, in this system, agreement and Case are regarded as the two sides of a same coin: if a DP AGREES with T, it gets nominative case, if it AGREES with  $v^*$ , accusative case.

## 2.2 Bošković (2007) and Kato et al. (2014)

Departing from Chomsky's original system, Bošković (2007) proposes to separate  $\phi$ -feature valuation from Case valuation. In his system,  $\phi$ -feature valuation of T and nominative case valuation take place separately as represented in (6). First, T probes for the subject DP, and  $\phi$ -feature valuation takes place (6a). Then, the DP moves to spec TP for the EPP requirement of T, and the DP acts as probe for case valuation there (6b). What is revealing in this system is that not only heads but also phrasal objects (i.e. DPs) can act as probe.

(6) a. T probes DP for  $\phi$ -feature

b. DP probes for Case-feature



Kato et al. (2014) takes a rather radical position. Differing from Bošković, who assumes the standard Chomskyan view that the probing operation is always triggered by *unvalued* features for feature valuation purpose, they propose that DPs with *valued* features are also able to initiate the probing operation. They call the downward probing operation *Search*, which is assumed to be a basic operation in syntax along with Merge. The role of Search is to establish any non-local syntactic relations which are not able to be created by Merge. Such syntactic relations are assumed to include AGREE(ment), chain formation and binding. Notice that once we allow syntactic objects having *valued features* to probe, the motivation to trigger the probing operation cannot be deletion of uninterpretable features via feature valuation as Chomsky assumes, since the features of a probe might be already valued. So, they characterize Search as an “identity-searching” operation, its purpose is searching an identical elements per se.<sup>1</sup>

### 2.3 The new probe-goal theory

In this section, based on the ideas in Bošković (2007) and Kato et al. (2014), especially on the latter, I propose a new probe-goal theory. In what follows, I keep using the term AGREE rather than Search for the probing operation in question because other non-local relations such as binding and chain formation are beyond the scope of this paper.

I propose the following conditions for the operation AGREE.

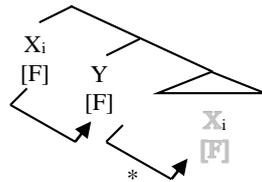
- (7) P AGREES with G, where P and G are SOs, iff
- every occurrence of G is in P's c-command domain
  - G has at least one identical feature to P's, and
  - there is no intervening X which has an identical feature to P.

<sup>1</sup> Another important proposal by Kato et al. (actually, their main proposal in the paper) is that what initiate the operation Search is always a syntactic object at phase edge (*Probe = Edge Hypothesis*). This is not assumed in this paper.

Let us see what (7) states one by one. My main proposal is expressed in the first line: What initiates the operation AGREE is a syntactic object (SO), which can be either a *head* or a *phrase*. Also note that it is claimed that AGREE does *not* operate on individual features what this operation does is to associate two SOs sharing some identical feature (see (10) below).

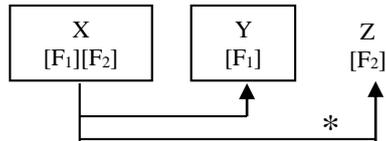
The first condition (7a) is stronger than the standard c-command condition on AGREE (5a). This condition states that, to be probed by P, *every occurrence* of G has to be c-commanded by P. To see how this condition works, let us see the following situation (8). Suppose that X and Y share a feature F, and that X, c-commanded by Y in its base position, undergo movement to a higher position than Y. Given such a situation, according to (5a), Y cannot probe for the lower copy of X, because there is an occurrence of X which is not in the c-command domain of Y. In other words, this condition states that *lower copies* are not able to be probed for AGREE. In (8), instead, the moved X is eligible to act as the probe for Y.<sup>2</sup>

(8) *Invisibility of lower copies for AGREE*

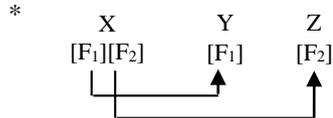


The second condition (7b) states that AGREE associates two SOs which share at least one identical feature. The last condition (7c) is basically the same as (5b) in Chomsky's system. Combining the two conditions, we expect to have the following situation of what I call *agreement intervention* as represented in (9): X is higher than Y, Y is higher than Z, and they all have a matching feature. The probing operation initiated by X, having F<sub>1</sub> and F<sub>2</sub>, looks for SOs having F<sub>1</sub> and/or F<sub>2</sub>. Then it finds Y, having F<sub>1</sub>, as the closest goal, and AGREE is established between X and Y. In effect, AGREEMENT between X and Z, which also share an identical feature F<sub>2</sub>, is blocked because X already AGREES with Y.

<sup>2</sup> Chomsky (2013, 2014) and Epstein et al. (2014) propose a similar condition for the Labeling Algorithm (LA). I claim that since the LA is also a top-down operation regulated by *minimal search*, it is not unreasonable to assume the same condition for AGREE.

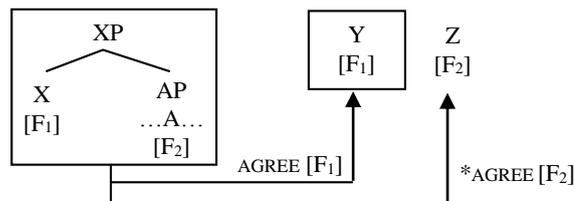
(9) *Agreement intervention*

The assumption that AGREE is triggered by SOs rather than individual features as stated in the first line of (7) is crucial here. If we assume that individual features initiate AGREE, agreement intervention of this kind doesn't arise altogether.

(10) *AGREE is NOT triggered by features*

In the new system, however, it is assumed that features are just *property* which characterizes SOs, and they are not subject to operations in syntax. Thus, I assume that syntactic operations such as Merge and AGREE always operate on SOs, the latter operation does not work as in (10).<sup>3,4</sup>

This point becomes clearer when X in (9) is a phrase XP which has the internal structure as shown below in (11).

(11) *Agreement intervention (phrasal probe)*

In this case, the entire XP initiates AGREE. Regardless of their structural positions inside XP, both  $F_1$  and  $F_2$  are the features which characterize XP. Therefore, the probing operation triggered by XP looks for some SOs which have  $F_1$  and/or  $F_2$ . Thus, the XP-probe looks for an SO which have  $F_1$  and/or

<sup>3</sup> See Narita (2014) for the 'atomic elements' in syntactic computation.

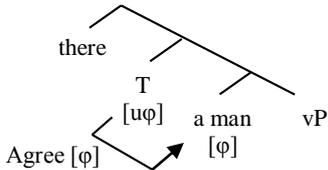
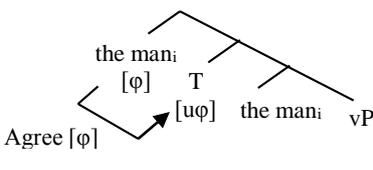
<sup>4</sup> See Hale & Keyser (2002) for applicability of Merge on features in the pre-syntactic component.

F<sub>2</sub>, and agreement intervention occurs here in the same way as in (9).<sup>5</sup> This property of phrasal probes plays a crucial role for the account of the SV-VS agreement asymmetry discussed in the following sections.

Finally, let us see how the new probe-goal system works for the following simple post-and pre-verbal subject sentences in (12).

- (12) a. There is a man in the room.  
b. The man is in the room.

(13a) and (13b) are representations of each sentence.<sup>6</sup> In (13a), the subject is assumed to stay at spec vP or whatever a lower position than T (cf. Belletti 2004). In this configuration, T is the probe and the subject is the goal for the  $\phi$ -feature agreement. On the other hand, in the pre-verbal subject sentence (13b), the subject is moved to spec TP. Here, the probe-goal relation is conversed: The subject is the probe and T is the goal. Remember that the lower copy cannot be probed by T due to the condition (7a).

- (13) a. Post-verbal subject  
probe = T, goal = a man
- 
- b. Pre-verbal subject  
probe = the man, goal = T
- 

In both situations, T ends up with AGREEing with the subject in the same way. In the following two sections, however, I will show that this asymmetrical status of the subjects – preverbal subjects as probe, postverbal subjects as goal are crucial to account for the SV-VS asymmetry.<sup>7</sup>

<sup>5</sup> In principle, X and A can initiate the probing operation individually in (11). But they cannot AGREE with Y and Z due to the c-command condition (7a).

<sup>6</sup> In the rest of the paper, I represent valued features as *F* (omitting “v”), and unvalued feature as *uF* for the sake of simplicity.

<sup>7</sup> Two more questions regarding the nature of AGREE are in order. *When* does AGREE operate? *Why* does it take place?

The first question is on the timing of the application of AGREE. By the new c-command condition (7a), we assume that lower copies are invisible for the probing operation. However, at the point where T is introduced in (13b) the subject is not a lower copy, and T can AGREE with the subject if AGREE is triggered at this point. In other words, the condition (7a) would be nullified if we assume that AGREE takes

### 3. Partial agreement with post-verbal subjects

This section discusses partial agreement in postverbal subject contexts and the absence of it in preverbal subject contexts. Based on Carstens' (1991, 2008, 2011) idea that  $\phi$ -features are hierarchically structured in a DP, I claim that this asymmetry should be attributed to the asymmetrical status of subjects depending on their relative position to T, under the new probe-goal theory proposed in the previous section: While preverbal subjects, being the probes for T, initiate AGREE for all of the  $\phi$ -features in them, postverbal subjects, being the goals for T, allow only D-head to be probed by T, which could end up with partial agreement.

#### 3.1 Partial agreement in post-verbal contexts

Samek-Lodovici (1996, 2002) report the following generalization about SV-VS asymmetry: Agreement between verbs and postverbal subjects is *never* richer than agreement between verbs and preverbal subject. In other words, in those languages which show the SV-VS asymmetry, postverbal subjects induce partial agreement with finite verbs, but preverbal subjects agree with finite verbs for full  $\phi$ -features. The followings are examples from Standard Arabic (Fassi Fehri 1993), French (Guasti and Rizzi 2002) and Fiorentino (Samek-Lodovici 1996). In each (b) sentence, preverbal subject agrees with the finite verb for full  $\phi$ -feature values. On the other hand, the postverbal (a) sentences show partial agreement, lacking number (and gender in Fiorentino) agreement.

- (14) a.  $\text{ʔakala l-muʕallim-uum}$  Standard Arabic  
 ate.3sgM the-teacher.plM-NOM  
 "The teachers ate."  
 b.  $\text{l-muʕallim-uum ʔakaluu}$   
 the-teacher.plM-NOM ate.3plM  
 "The teachers ate."
- (15) a. Il est arrivé trois hommes French  
 It is arrived.sg.M three girls

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place in this way. Following Chomsky (2007, 2008), I speculate that AGREE takes place at the phase level. Hence, application of AGREE is delayed until the phase is constructed. Assuming vP and CP to be phases, T doesn't initiate AGREE immediately after introduced into the derivation.

The last question is about the motivation of AGREE. Adopting Kato et al.'s (2014), and as discussed in 2.2, I assume that identity searching itself is the motivation of AGREE.

- “Three girls arrived”
- b. Trois filles sont arrivées  
three girls are arrived.pl.F  
“Three girls arrived.”
- (16) a. Gl’è venuto delle ragazze Fiorentino  
There is.3sg come.3sg some girls  
“There arrived some girls.”
- b. Delle ragazze le parlano  
some girls cl.3pl.F speak.3pl  
“Some girls speak.”

Table 1 is the list of languages which show the SV-VS asymmetry of this sort (Samek-Lodovici 2002: 50). In the languages in the first group, number and/or gender agreement is missing in post-verbal subjects agreement. Both number and gender agreement are lost in post-verbal subjects agreement in the second group of languages.<sup>8</sup>

Table 1.  
*SV-VS agreement in person (ps), number (num) and gender (gen)*

Language	Pre-verbal subject	Post-verbal subject
Standard Arabic	ps, num, gen	ps, gen
French	ps, num	ps
Fassan	ps, num, gen	ps, (num)
Genoese	ps, num, gen	ps, (num)
Romagnol	ps, num, gen	ps, (num)
Conegliano	ps, num, gen	ps
Trentino	ps, num, gen	ps
Fiorentino	ps, num, gen	ps

Considering this cross-linguistic observation, a question arises as to why partial agreement is always triggered by postverbal subjects and never by preverbal subjects. It is not obvious how Chomsky’s probe-goal system derives this asymmetry, since subject-predicate agreement is always established by T as probe and the subject as goal, whether the subject appears before or after the verb.

In the rest of this section, I argue that the keys to solve this puzzle are in (i) the internal structure of DP and how  $\phi$ -features are distributed there,

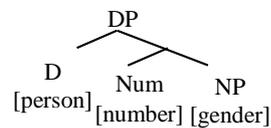
<sup>8</sup> The parentheses indicate that in those languages, number agreement is optionally lost only when the subject is feminine (Samek-Lodovici 2002: fn2, citing Haiman & Benicá 1992).

and (ii) the asymmetrical roles of subjects in the new probe-goal system: pre-verbal subjects as probe, post-verbal subjects as goal.

### 3.2 The DP-internal structure of $\phi$ -features

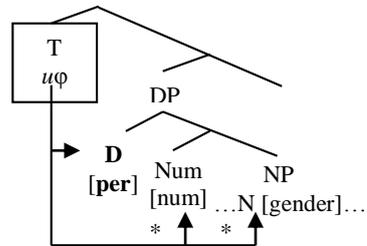
Developing Abney's (1987) DP hypothesis, Carstens (1991, 2008, 2011) propose that DPs have the following structure (17), where [person], [number] and [gender] are located on D, Num and N, respectively.

(17) *Internal structure of DP*

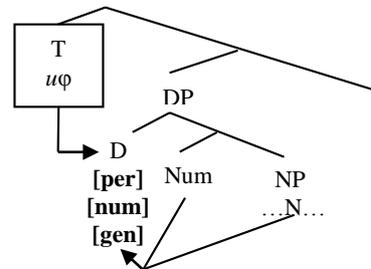


Assuming the minimalist assumption that there is no feature percolation mechanism, Carstens argues that when a DP is probed by some higher element, only [person] is accessible by the probe because it is the closest goal for the probe as shown in (18a). However, as a matter of fact, it is widely attested that many languages show subject agreement in number and/or gender as well. Carstens assumes that this is made possible by raising Num and/or N to D as shown in (18b).

(18) a.



b. Num/N raising to D



### 3.3 Analysis

Having Carstens' idea presented above in mind, let us see how the new probe-goal system developed in section 2 derives the SV-VS agreement asymmetry.

First, I assume that languages are parameterized whether they have the Num/N raising to D as in (18b). If the raising is missing, DPs in the

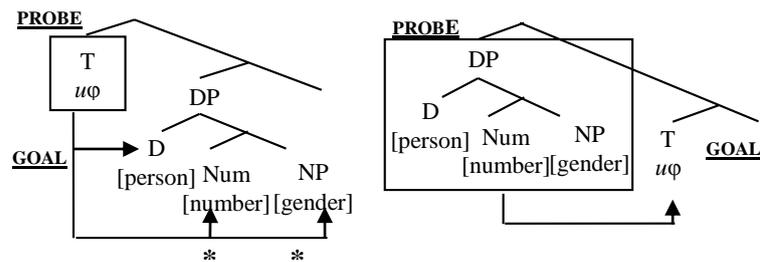
language have the structure as in (18a), where only [person] can be accessed by the probe. On the other hand, if Num and/or N undergo raising to D, these features become available by the probe as in (18b). Thus, I claim that partial agreement is obtained if the language lacks the Num/N raising to D, which makes [number] and/or [gender] inaccessible by T.

Then, let us consider preverbal subject agreement. Why do they never exhibit partial agreement? We have already seen in 2.3 that in our probe-goal system, when a XP-probe has multiple agreement features in it, all of those features participate in the probing operation. Therefore, when an entire pre-verbal subject DP acts as probe, all of the agreement features which characterize the DP ([person], [number] and [gender]) participate in the probing operation. In effect, full  $\phi$ -feature agreement is obtained.

To demonstrate how the asymmetry is derived, consider a language from the second group in Table 1, in which postverbal subjects show person agreement only, while preverbal subjects exhibit full  $\phi$ -feature agreement. When the subject appears postverbally, being structurally lower than T, it acts as the goal for the T-probe as shown in (19a). Assuming there is no Num/N raising to D in those languages, T can only agree for [person] at D. And as I proposed in the previous section, T's probing stops there. So, agreement for [number] and [gender] does not take place in this situation (*agreement intervention*), which results in partial agreement. On the other hand, if the subject DP is raised to the preverbal position (i.e. spec TP), then the subject probes for all of the three  $\phi$ -features contained in it and finds T which has unvalued  $\phi$ -feature as its goal as represented in (19b), which ends up with full  $\phi$ -agreement. Note that T cannot probe for the lower copy of the subject due to the new c-command condition (7a).

(19) a. Post-verbal: partial agreement

b. Pre-verbal: full agreement



Although I don't provide a detailed analysis for the existence/absence of the Num/N raising in each language in this paper, the new probe-goal

system is able to make a clear-cut prediction about partial agreement as stated in (20).<sup>9</sup>

- (20) a. Preverbal subjects *never* induce partial agreement.  
 b. Postverbal subject *can* induce partial agreement.

This generalization is obtained by the different status of pre- and post-verbal subjects: The former as the probe, the latter as the goal for T. For postverbal DPs, the internal structure matters when they get probed by T: presence/absence of the Num/N raising to D. Being probe, on the other hand, a preverbal DP as a whole initiate the probing operation, which always makes their goal fully  $\phi$ -valued.<sup>10</sup>

#### 4. First Conjunct Agreement

The SV-VS agreement extends to another contrast: Postverbal subjects can induce first conjunct agreement but preverbal subjects cannot.

In some languages, predicates agree only with the first conjunct of the coordinated subject (first conjunct agreement; FCA). We have already seen an example from Standard Arabic in section 1, which is repeated here as (21). Here again, we observe the SV-VS agreement asymmetry: Only postverbal subjects induce FCA. In (21a), the verb agrees with the first conjunct *the girl*, whereas it agrees with the entire conjunct in (21b).

- (21) a. xaraj-at      [al-bintu wa      ʔal-waladu]      Standard Arabic  
          left-3sgF      **the girl** and      the boy  
          “The girl and the boy left”  
       b. [al-bintu      wa      ʔal-waladu]      xaraj-aa  
          the girl      and      the boy      **left-3duM**

<sup>9</sup> See Preminger (2011) for a different approach to partial agreement. Preminger’s argument is based on the assumption that each  $\phi$ -feature is located at its own head and they probe separately from one another (Anagnostopoulou (2003), Béjar (2003), Chomsky (2000), among others). I leave the issue open for future research as to if his analysis is compatible with mine.

<sup>10</sup> It is a well-known fact that pronominal subjects don’t induce partial agreement even they appear postverbally (see Harbert and Bahloul 2002 for Standard Arabic, Sadler 2003 for Welsh, for example). This is not incompatible with our analysis, if we assume that pronouns have syntactically flat structure, where all of  $\phi$ -features is on the same head which can be accessed by the probe.

As reported in Munn (1993), even English exhibits FCA.<sup>11</sup> Post-verbal subjects are only allowed in the *there*-construction in the language, but FCA is exactly observed in the construction. While in the postverbal subject sentence (22a), the copula agrees with the first conjunct, having the third person singular form, it has the plural form when the subject appears preverbally (22b).

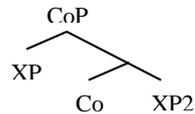
- (22) a. There is/\*are a man and a woman in the garden  
 b. A man and a woman are/\*is in the garden

The aim of this section is to account for FCA in postverbal subject contexts, and *lack* of it in other contexts, based on the new probe-goal theory. In the next sub-section, I will review van Koppen's (2007) analysis of FCA, on which my argument is constructed.

#### 4.1 van Koppen (2007)

To account for FCA in postverbal contexts, van Koppen (2007) provides the following argument. First, as represented in (23), she assumes coordinated subjects to be Conjunction Phrases (CoP: Munn 1993; Kayne 1994; Johannessen 1998) in which the first and second conjuncts are asymmetrically structured; the former is higher than the latter.

- (23) *The structure of coordination*



Second, she proposes that the maximal projection of CoP and the first conjunct are equally local to higher probes, given the definition of locality (24) and (25).

- (24) *Equally local*  
 Y and Z are equally local to X iff,  
 (i) X c-commands both Y and Z  
 (ii) the set of nodes that c-command Y is equal to the set of nodes that c-command Z.

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<sup>11</sup> Many other languages are also reported to have FCA in postverbal contexts:: see Marušič, Nevins and Saksida (2007) and references cited therein, for example.

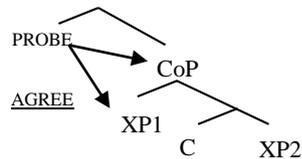
(25) *More local*

Y is more local to X than Z iff,

(i) X c-commands both Y and Z and

(ii) the set of nodes that c-command Y is a proper subset of the set of nodes that c-command Z.

With these assumptions, she claims that in the syntactic component, AGREE relates the probe with the maximal projection of CoP and the first conjunct simultaneously as shown in (26).

(26) *Probe AGREES with CoP and XP1 simultaneously*

The decision as to which one of these goals eventually determines the agreement morphology of the probe is postponed to the post-syntactic morphological component. Following the Subset Principle of Distributed Morphology (Halle 1997), she assumes that when a probe gets more than one feature value, agreement morphology which has a more specified value is realized on the probe.

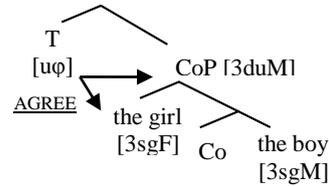
Based on these assumptions, consider how FCA in postverbal subject contexts is derived, with the example of Standard Arabic, repeated below.

- (27) xaraj-at [al-bintu wa ʔal-waladu] Standard Arabic  
 left-3sgF the girl and the boy  
 “The girl and the boy left”

As in the previous section, let us assume that preverbal subjects are at spec vP. Then, the syntactic representation at the point where T AGREES with the postverbal coordinated subject is as shown in (28), where T AGREES with both CoP, having third person, dual and masculine features, and the first conjunct *the girl*, having third person, singular and feminine features.<sup>12</sup>

<sup>12</sup> In Standard Arabic, when different genders are conjoined, the entire coordination is specified as masculine which is supposed to be the *default* gender in this language (Aoun, Benmamoun and Choueiri 2010).

(28) *T AGREEs with CoP and “the girl” simultaneously*



Which features of the goals are realized at T is determined at the post-syntactic component, depending on which morphology has more specified values. Let us see the agreement paradigm of Standard Arabic (29).

(29) *Agreement paradigm of third person agreement (perfective) in Arabic*

Person	Number	Gender	Affix
3	Singular	Masculine	-a
3	Singular	Feminine	-at
3	Dual	Masculine	-aa
3	Dual	Feminine	-ataa

(from Aoun, Benmamou and Choueiri 2010)

As noted in footnote 11, masculine is the default gender in this language. Hence, each affix morpheme should be regarded as having the following feature specification, on the assumption that masculine feature is underspecified in this language.

- (30)
- a [3<sup>rd</sup>, singular]
  - at [**3<sup>rd</sup>, singular, feminine**]
  - aa [**3<sup>rd</sup>, dual**]
  - ataa [3<sup>rd</sup>, dual, feminine]

In (28), the features of CoP and that of first conjunct *the girl*, -aa and -at, respectively, are compared. Since the latter is featurally more specified, T ends up with being realized as -at.

The FCA in English is explained in the same way. In the example (22), repeated here as (31), *is* and *are* are in competition. Considering the agreement paradigm in English summarized in (32), *are* appears more generally than *is* does, hence it is concluded that *is* has more specified feature values. In effect, T is realized as *is* in the sentence.

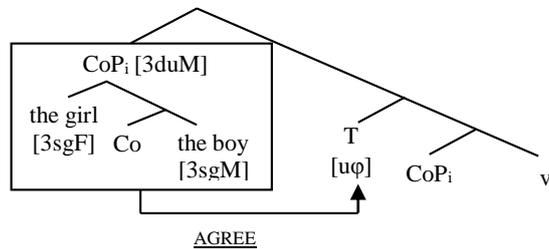
(31) There is/\*are a man and a woman in the garden

(32) *Inflection of be (present tense) in English*

Person\ Number	Singular	Plural
1 <sup>st</sup>	<i>am</i>	<i>are</i>
2 <sup>nd</sup>	<i>are</i>	<i>are</i>
3 <sup>rd</sup>	<i>is</i>	<i>are</i>

## 4.2 Lack of FCA in preverbal contexts

The new probe-goal theory allow us to account for the *lack* of FCA in preverbal subject contexts in the same way as we account for the lack of partial agreement in the same context. As we have seen in section 2.3 and 3.3, when a XP act as probe, it searches for the features which characterize the entire XP. In the case of (21b), which is structurally represented as (33), CoP is the probe; and this phrase as a whole is characterized by the resolved feature [3duM] due to the presence of Co<sup>0</sup>. In this configuration, the first nor second conjunct cannot probe for T because they do not c-command it. In effect, T always gets valued by the resolved feature and FCA never happens in preverbal contexts.

(33) *Lack of FCA in preverbal subject contexts*

The proposed analysis also correctly predict FCA in complementizer agreement (CA). A well-known case of Tegelen Dutch is shown below.

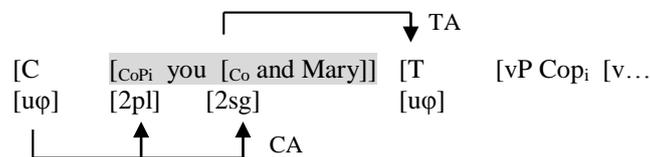
- (34) Ich dink de-s [toow en Marie] kump  
 I think that-2sg you.sg and M come.pl  
 "I think that you and Mary will come"

(Tegelen Dutch: van Koppen 2007)

Here, the complementizer exhibits FCA: It only agrees with the first conjunct (= *you*). On the other hand, the finite verb in the embedded clause

agrees with the entire coordination (Subject-verb agreement: henceforth T-agreement or TA). Assuming that C also has unvalued  $\phi$ -feature in this language, this pattern is exactly what we expect under our analysis. For CA, C is the probe and the CoP is the goal, whereas for TA, CoP is the probe and T is the goal. Thus, as represented in (35), C AGREES with both CoP and the first conjunct, which ends up with exhibiting FCA.<sup>13</sup> On the other hand, T is AGREED with the entire CoP because CoP is acting as probe for this agreement.

(35) CA and TA: Only the former induces FCA



This account predicts that when the coordinated subject is raised higher than the embedded C, the complementizer does not induce FCA, because it is expected to work as the probe for C there. The prediction is born out. See the example (36), which is also from Tegelen Dutch (van Koppen 2007: 149), where the embedded coordinated subject is raised to the matrix clause by topicalization. The complementizer is inflected for the entire coordination.

(36) [doow en Marie]<sub>i</sub> denk ik, ?**det**/\***de-s** het spel zull-e t<sub>i</sub> winnen  
 you.sg and Marie think I **that**/\***that-2sg** the game will-pl win  
 ‘lit. You and Marie, I think \_\_ will the game.’

In summary, under our theory, the following generalization on FCA is obtained based on CoP’s role in the new probe-goal system.<sup>14</sup>

<sup>13</sup> The complementizer agreement paradigm in this language shown below suggests that 2sg is more specified than the others.

	singular	Plural
1 <sup>st</sup>	det	det
2 <sup>nd</sup>	<b>de-s</b>	det
3 <sup>rd</sup>	det	det

(van Koppen 2007:130)

<sup>14</sup> Van Koppen, who assumes the standard probe-goal theory, accounts for the lack of FCA in preverbal subject contexts by stipulating that a probe can only access to

- (37) a. CoPs, being probes, *never* induce FCA.  
 b. CoPs, being goals, *can* induce FCA.

## 5. Conclusion

In this paper, I have proposed a new probe-goal theory, adopting Kato et al.'s (2014) idea that *phrases* with *valued* features can probe, contrary to Chomsky's theory, according to which only heads with unvalued features initiates the probing operation. The main proposal is that when a phrase act as probe, all of the features which characterize the entire phrase participate in the probing operation.

This theory enables us to give a unified account for the presence and the absence of the two cases of impoverished agreement: Partial agreement and first conjunct agreement. Partial agreement in postverbal contexts is explained by the assumption that  $\phi$ -features are hierarchically structured in DPs and only the feature on the highest node (i.e.  $D^0$ ) are accessible by the probe (Carstens 2011). First conjunct agreement is accounted for based on van Koppen's (2007) analysis, according to which the maximal projection of CoP and the first conjunct of it are equidistant from the probe, and the probe ends up with realizing the features of the first conjunct if it has more specified value than that of the maximal projection of CoP.

The proposed theory correctly predicts that impoverished agreement is not induced when subjects act as probe because the features of the entire subject is searched by the probing operation in those cases. In conclusion, the following generalization on impoverished agreement is obtained under my version of probe-goal theory.

- (38) a. XPs, being probes, *never* induce impoverished agreement.  
 b. XPs, being goals, *can* induce impoverished agreement.

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maximal projection of its goal if it is a lower copy. Her analysis makes the same prediction about the facts presented in this section. However, it is not obvious how her analysis can extend to the lack of partial agreement in preverbal subject contexts. At least, her analysis cannot account for it, if we assume the minimalist assumption as assumed in 3.2 that there is no feature percolation mechanism. On this assumption, her analysis wrongly predicts that languages which show partial agreement in postverbal subject contexts also show partial agreement in preverbal subject contexts. In those languages, it is supposed to lack Num and/or N raising to D, hence the maximal projection of the lower copy of XP only has partial  $\phi$ -feature, which results in partial agreement with T. I claim that this is a crucial difference between van Koppen's analysis and mine: only the latter provides a unified account for the two cases of impoverished agreement as in (38).

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