

Evidence for constraints on probing dynamics: A case study of adjectival concord

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Abstract

Based on facts of adjectival concord in Standard Arabic, this article offers evidence that upward probing (i.e., the goal c-commands the probe) is permitted only if downward probing (i.e., where the probe c-commands the goal) does not result in valuing the probe's uninterpretable feature. Such a constraint on upward probing allows us to account for several intriguing observations in Arabic grammar, including the fact that an adjective can agree in number and gender with one nominal, but in definiteness with another nominal. Hence, on the one hand, this article lends support to Agree proposals according to which absence of a match in the c-command domain of an unvalued feature (uF) is not fatal to the derivation. On the other hand, it speaks against Agree proposals that do not license downward probing or view it as parasitic on upward probing.

Keywords: adjectival concord, Agree, Arabic, probing dynamics, unvalued features

Résumé

Basé sur des faits provenant de la concordance adjectivale en arabe standard, cet article offre la preuve que le sondage vers le haut ('upward probing', où la cible c-commande la sonde) n'est autorisé que si le sondage vers le bas ('downward probing', où la sonde c-commande la cible) n'a pas réussi à spécifier la valeur d'un trait ininterprétable (uF) de la sonde. Une telle contrainte sur le sondage vers le haut nous permet de rendre compte de plusieurs observations intrigantes dans la grammaire arabe, y compris le fait qu'un adjectif peut s'accorder, en nombre et en genre, avec un élément nominal, mais s'accorder, quant à la définitude, avec un autre élément nominal. D'une part, cet article apporte donc un soutien aux propositions sur l'accord selon lesquelles l'absence de correspondance ('match') dans le domaine de c-commande d'un trait uF n'est pas fatale à la dérivation. D'autre part, il affaiblit les propositions d'accord qui n'autorisent pas le sondage vers le bas ou le considèrent comme étant parasitaire au sondage vers le haut.

Mots-clés: concorde adjectivale, accord, arabe, dynamique de sondage, traits non-valorisés

We are extremely grateful to three CJL anonymous reviewers whose extensive comments and suggestions helped us shape the article into a much better form.

1. INTRODUCTION

DP-internal concord, including noun-adjective agreement (i.e., adjectival concord) in ϕ -features (i.e., number and gender), case, and definiteness, in Arabic, Hebrew and other Semitic languages has attracted the attention of many syntacticians (Fassi Fehri 1993, 1999; Siloni 1997; Borer 1999; Kremers 2003; Shlonsky 2012; AlQahtani 2016; Jarrah et al. 2020, among many others).¹ The Standard Arabic (henceforth SA) constructions in (1) are examples of this phenomenon whereby the modifying adjective inflects for the number, gender, case and definiteness of the modified noun.²³

- | | | |
|--------|--|--|
| (1) a. | ʔal-fata:t-u
DEF-girl.F-NOM
'The beautiful girl' | ʔal-dʒami:l-at-u
DEF-beautiful.SG-F-NOM |
| b. | fata:t-un
girl.F-NOM
'A beautiful girl' | dʒami:l-at-un
beautiful.SG-F-NOM |
| c. | ʔat ^ʕ -t ^ʕ a:lib-u
DEF-student.M-NOM
'The hard-working student' | ʔal-mudʒtahid-u
DEF-hard.working.SG.M-NOM |
| d. | ʔat ^ʕ -t ^ʕ ulla:b-u
DEF-students.M-NOM
'The hard-working students' | ʔal-mudʒtahid-u:n
DEF-hard.working.M-NOM.PL |

Since interest in agreement relations and their surface manifestations within the nominal domain has arisen, DP-internal concord has posed several problems for theoretical models that have, among other things, attempted to unify it with agreement patterns outside DP under one approach of syntactic dependencies (Danon 2008, 2011). This research presents evidence that DP-internal concord, with special focus on adjectival concord in SA, requires no specialized mechanisms different from the mechanisms proposed for Agree relations outside DP. This crucially conforms to syntactic accounts that propose that aspects of DP-internal concord follow from the Agree operation (Chomsky 2000, 2001) which is typically established between elements outside DPs (e.g., Carstens 2000, Danon 2008). This unification of sentential and nominal accounts of agreement phenomena is a step toward a

¹Attributive and predicative adjectives in Arabic do not inflect for the person of the modified noun (see Fassi Fehri 1999, Ryding 2005).

²All examples provided in this article are in Standard Arabic (SA) unless otherwise specified. Notice that an adjective in SA might agree in definiteness with a noun that it does not semantically modify. See below for further discussion.

³1,2,3: Person; ACC: Accusative case; AUX: Auxiliary; COMP: complementizer; CSN: Construct State Nominal; DAT: Dative; DEF: Definite; F: Feminine; GEN: Genitive case; INE: Inessive case; IMPF: imperfective; M: Masculine; NOM: Nominative case; NUN: nunation; PAR: Partitive case; PDC: probing dynamics constraint; PL: Plural; PRS.PCPL present participle; PRT: Particle; PST: Past; SA: Standard Arabic; SA: Subject agreement; SBJ: Subject; SG: Singular; uD: unvalued definiteness; uF: unvalued feature; x: irrelevant/unclear.

better understanding of Agree dependencies, as research on clausal syntax is no longer impervious to Agree relations within the nominal space (Danon 2008, 2011).

This article also provides novel evidence that Agree relations inside a DP can be implemented upwards, contra Chomsky's (2000, 2001) proposal which requires a probe to c-command its goal in order to instantiate valuation. Upward probing is nonetheless shown to operate when downward probing is insufficient to value the probe's unvalued feature (uF). This indicates that probing in Arabic is dynamic, as directionality of probing can change from downwards to upwards, depending crucially on whether or not a matching accessible goal is located within the c-command domain of a probe. This line of analysis allows us to construct an argument against Agree proposals that restrict probing to instantiate either upwards (Zeijlstra 2012) or downwards (Chomsky 2000, 2001). It also poses a challenge to proposals that view downward probing as dependent on upward probing (Bjorkman and Zeijlstra 2019). On the other hand, constraining probing dynamics in the way formulated in the current research adds weight to proposals that allow upward probing when downward probing fails to value the probe's uF (e.g., Béjar and Rezac 2009, Carstens 2016).

The following discussion is structured as follows. Section 2 introduces the Agree operation (Chomsky 2000, 2001) and discusses related debates regarding the directionality of this operation in the grammar. Section 3 provides a description of the key observations that the current work attempts to explain. Sections 4 and 5 demonstrate that the switch from downward probing to upward probing is possible in Arabic grammar. Upward probing, however, is only instantiated when downward probing fails to value the probe's uF. Section 6 presents our conclusions.

2. THEORETICAL PRELIMINARIES

In the Minimalist program (Chomsky 1995, et seq.), Agree and Move operations are prompted by the presence of unvalued features (henceforth uFs). Chomsky (2000, 2001) proposes that such features are valued through the Agree operation which is established within a local domain that is configurationally specified. Chomsky uses the term 'probe' for a feature that initiates a search for what he calls a 'goal'. The probe carries uF, while the goal bears the matching valued feature. Chomsky also proposes that the goal must be c-commanded by the probe. However, as Svenonius (2019) points out, several modifications to Chomsky's (2000, 2001) Agree model of syntactic dependencies have been offered in the related literature. For instance, Zeijlstra (2012) argues that the goal should c-command the probe. Zeijlstra (2012) treats all cases of downward probing as instances of movement whereby the probe moves to a position, c-commanding the goal. This treatment by Zeijlstra (2012) has been modified by Bjorkman and Zeijlstra (2019), who propose that downward probing can be prompted; however, this can occur only as a dependent operation on a separate independently established upward probing relation (see, however, Polinsky and Preminger 2019 for a refutation).

On the other hand, there is a different family of analyses which has claimed that upward probing is possible when downward probing does not result in valuing the probe's uF. This essentially indicates that the absence of a match in the c-command domain of an unvalued feature is not fatal to the derivation (see Carstens 2016). Based on the phenomenon of agreement displacement, especially in languages where person-feature hierarchies determine whether verb agreement is to be controlled by the object or the subject, Béjar (2003); Rezac (2003, 2004); and Béjar and Rezac (2009) propose the 'Cyclic Agree' operation. This operation does not require the Agree operation to exhaust a probe which can enter into several Agree relations. For example, if the object is first or second person, the verb agrees with it (see (2a,b,c)). By contrast, when the object of the verb is third person (which is low on the person hierarchy), and the subject is first or second person, the verb agrees with the subject rather than the object (2d). Examples in (2) are from Basque, a null-subject language (see Béjar and Rezac 2009: 37); 'x' in the gloss means 'irrelevant/unclear'.

- (2) a. Ikusi z-in-t-u-da-n. 1 → 2 = 2
 seen 2-x-PL-have-1-PST
 'I saw **you**.'
- b. Ikusi n-ind-u-en. 3 → 1 = 1
 seen 1-x-have-PST
 'He saw **me**.'
- c. Ikusi n-ind-u-zu-n. 2 → 1 = 1
 seen 1-x-have-2-PST
 'You saw **me**.'
- d. Ikusi n-u-en. 1 → 3 = 1
 seen 1-have-PST
 'I saw him.'

Béjar and Rezac (2009) interpreted the examples in (2) as evidence that when the object fails to control the verb's uF, the verb probes the subject in a second cycle of probing under cyclic expansion, which is schematically shown in Figure 1:

The most important point here is that under cyclic expansion, the Agree relation between the probe and its goal can flip, in the sense that the probe can Agree with a c-commanding goal. Carstens (2016: 36) comments on Béjar and Rezac's (2009) cyclic expansion, mentioning that 'Basque and other agreement displacement languages thus can be taken as supporting evidence that *the positions* of would-be probe and goal can be *reversed*' (emphasis added). Following the logic of Cyclic Agree, we can propose that v⁰ in (2d) probes upwards to Agree with the c-commanding (pro-)subject.

Likewise, Carstens (2016) offers an account of the Agree operation according to which Agree can be 'delayed'. Under this account, if a matching feature for uF on X⁰ is available in the c-command domain of X⁰ at Merge, valuation of uF takes place, instantiating downward Agree. However, if no matching feature is available for uF on X⁰ within the c-command domain of X⁰ at Merge, delayed valuation takes place whereby uF's valuation can be delayed until the merger of extra material

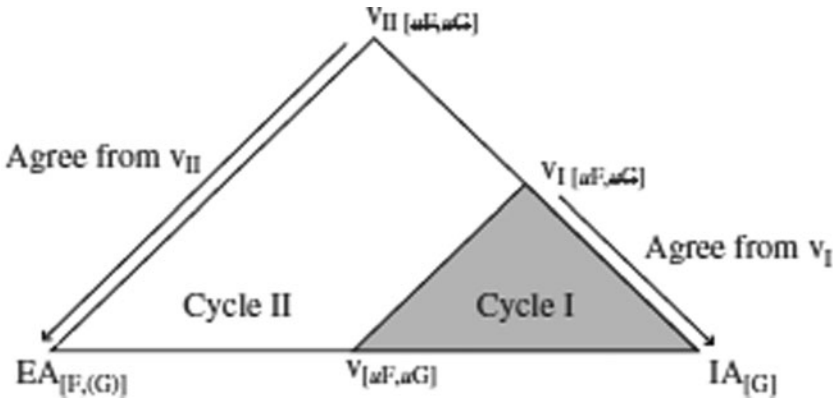
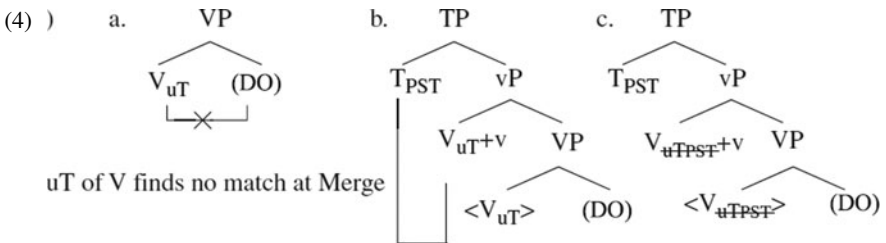


Figure 1: Cyclic expansion (from Béjar and Rezac 2009: 94)

above it. Carstens (2016) argues that when delayed valuation takes place, two directionality-free mechanisms can be used to value X^0 's uF , as in (3):

- (3) Directionality-free mechanics of delayed valuation (Carstens 2016: 5):
 The unvalued feature with no match in its c-command domain can be valued
 - a. Ex situ, by raising into locality with a matching feature, OR
 - b. In situ, by the closest matching feature within the same phase.

For the current article, the mechanism in (3b) is more relevant as it permits the probe to agree with a c-commanding goal. For instance, Carstens (2016), among other arguments, discusses V^0 - T^0 Agree in English as an example of in-situ delayed valuation. In this regard, she follows earlier work by Pesetsky and Torrego (2007), who consider the tense feature on verbs in English as an instance of an uF which therefore must be valued by the interpretable feature Tense $[T]$ on T^0 . Carstens proposes that V^0 agrees with the c-commanding T^0 , not because V^0 always instantiates upward Agree, but because there exists no valued $[T]$ feature within V^0 's accessible c-command domain. Accordingly, V^0 's $[uT]$ obtains delayed valuation for the derivation to converge. Upon the merger of T^0 , V 's uT is valued by c-commanding T^0 , which is contained in the same transfer domain of V^0 (given that V^0 always raises to v^0 which is moved to the interface levels along with T^0 ; see Chomsky 2008). V^0 - T^0 Agree in English is diagrammed in (4) (Carstens 2016: 37).



The present article provides novel evidence supporting the view that upward probing can be initiated when downward probing fails to value the probe's uF. Our primary evidence comes from Arabic facts of adjectival concord, which have never been investigated in this respect.

3. SETTING THE STAGE

It is a well-known fact that modifying adjectives in Arabic (and Semitic languages in general) agree in number, gender, and definiteness with the noun they modify (see Fassi Fehri 1999, Shlonsky 2004, Ryding 2005). Consider the examples in (5), from Standard Arabic.

- (5) a. ʔal-fata:t-u ʔal-dʒami:l-at-u
DEF-girl.F-NOM DEF-beautiful.SG-F-NOM
 'The beautiful girl'
- b. ʔal-fataja:t-u ʔal-dʒami:l-a:t-u
DEF-girls.F-NOM DEF-beautiful-PL.F-NOM
 'The beautiful girls'
- c. fata:t-un dʒami:l-at-un
girl.F-NOM beautiful.SG-F-NOM
 'A beautiful girl'

The examples in (5) show that the modifying adjective *dʒamiil* 'beautiful' agrees in number, gender and definiteness with the noun it modifies.⁴

An important question to be resolved is how this adjectival concord is syntactically accounted for. One look at the related literature reveals how hotly debated the answer to this question has been (e.g., Ritter 1991, Siloni 1997, Borer 1999, Fassi Fehri 1999, Cinque 2005, Bardeas 2009, Shlonsky 2012). While we cannot review all the literature on the syntax of nominal concord, an important proposal regarding the agreement markings on adjectives is that these markings on modifying adjectives are semantically vacuous insofar as they are parasitic on the features of the noun they modify (Siloni 1990, 1997; Borer 1996, 1999; Shlonsky 2004). In order to account for this fact, we propose that adjectival concord in Arabic is a morphological expression of the Agree operation that is established between the adjective and the noun it modifies. The two enter into an Agree relation whereby the modifying adjective carrying an uF acts as the probe, whereas the noun carrying the matching valued feature

⁴Modifying adjectives in Arabic also agree in Case with the noun they modify. For instance, in (5a) the noun and the modifying adjective carry the same (default) Nominative case. When the noun is assigned Accusative Case, the modifying adjective also carries Accusative Case, as evidenced in (i).

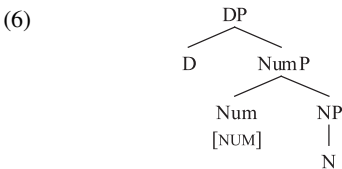
(i) ja:hada ʔal-fata:t-a ʔal-dʒami:l-at-a
see.PST.3SG.M DEF-girl-ACC DEF-beautiful.SG-F-ACC
 'He saw the beautiful girl.'

In this research, we focus on ϕ - and DEF-Agree, as case always patterns with definiteness.

acts as the goal. However, for reasons that will become apparent, the actual implementation of this agreement dependency is not straightforward. In fact, a modifying adjective may agree with more than one goal in order to have all of its unvalued content valued. These goals are not necessarily *c*-commanded by the modifying adjective, nor *c*-commanding the modifying adjective.

Let us start with the analysis of simple DPs that involve a head noun and one modifying adjective. However, before we turn to the main part of the analysis (i.e., how the Agree relation between the head noun and the modifying adjective is implemented), we need to discuss the locus of the relevant features within the nominal domain, as well as the structural position of modifying adjectives within the nominal domain.

Let us first look at number. Ritter (1991) argues explicitly that number (singular, dual, and plural) is not an inherent feature of nouns, but is instead a property of Number Phrase (NumP) which is a functional projection that dominates NP (see also Harbour 2011, among others). In minimalist terms, the head of NumP, Num⁰, can be said to bear the valued [NUM] feature of the host DP. Following the assumption that the number specification of modifying adjectives in Arabic does not contribute to the interpretation of the accompanying construction, we propose that the modifying adjective within a DP bears an unvalued [NUM] that is valued by Num⁰. According to Ritter (1991) and other researchers (including Valois 1991; Cinque 1992, 1995, 2005; Bernstein 1993; and Shlonsky 2004), NumP is projected as an extended projection of the head noun. The DP layer is projected above NumP, as shown in (6).⁵

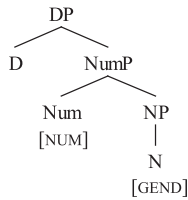


Borer (2005) argues that NumP can be missing from the structure, giving rise to non-quantity interpretation. She proposes that NumP is responsible for the assignment of quantity to a noun or divisions of it such as *much salt* vs. *many books* (see also Alexiadou 2014).

As for the gender feature of the DP, the situation is quite different. Although few attempts in the related literature specify a unique projection to Gender (e.g., Picallo 1991), the most commonly held view within the Semitic generative practice (and beyond) is that no Gender Phrase is projected within DP. The head N⁰ bears the gender feature [GEND] of the whole DP (see Ritter 1991, Kihm 2005, Lowenstamm 2008, Kramer 2015). This amounts to saying that [GEND] is specified for each noun as part of its lexical entry, as shown in (7).

⁵Following Abney (1987), Ritter (1991) takes NumP as equivalent to TP that projects in the sentential domain.

(7)



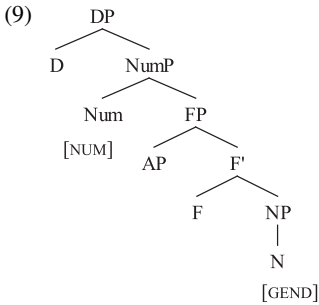
As for the position of Adjective Phrases or APs (headed by the modifying adjectives) within the nominal domain, there is no single agreed-upon view (see Bardeas 2009). However, one widely held view with respect to the position of nominal modifiers in DPs in Arabic and many other languages, including Germanic and Romance languages, is that they are base-generated in the specifier position of dedicated functional projections (FPs) located between NumP and NP (Crisma 1996; Sichel 2002; Shlonsky 2004; Cinque 2005, 2010). One argument supporting this analysis comes from the fact that adjectives in Arabic observe Mirror Image Ordering, that is, different classes of nominal modifiers appear in the opposite order to the one in which they appear in languages with prenominal adjectives (see Fassi Fehri 1999, Kremers 2003, Shlonsky 2004). For instance, Fassi Fehri (1999: 107) mentions the two examples from SA in (5) to show that the ordering of several classes of adjectives in Arabic is the opposite of the order of these adjectives in English.

- (8) a. al-kita:b-u al-ʔaxd^ʕar-u al-kabi:r-u
 DEF-book.M.SG-NOM DEF-green.M.SG-NOM DEF-big.M.SG-NOM
 ‘The big green book’
- b. fai-un s^ʕ i:niu-n ʔaxd^ʕaru-n ḍʒaiedu-n
 tea.M.SG-NOM Chinese.M.SG-NOM green.M.SG-NOM excellent.M.SG-NOM
 ‘An excellent green Chinese tea’

The Arabic adjective denoting size (al-kabi:r ‘big’) follows the adjective denoting colour (al-ʔaxd^ʕar ‘green’); origin adjectives (s^ʕ i:niu-n ‘Chinese’) come before colour ones, and colour adjectives come before quality-denoting ones (ḍʒaiedu-n ‘excellent’). The English translations of the two examples in (8) show that the opposite ordering prevails in English (see Bardeas 2009: 32).

Shlonsky (2004) argues that the fact that Arabic observes Mirror Image Ordering is evidence against the adjunction analysis of adjectives, given that adjunction does not give rise to Mirror Image Ordering. He also mentions that an adjunction analysis to adjectives within DPs does not account for the fact that the rightmost adjective takes scope over the leftmost adjective. He argues, rather, that the nominal modifiers merge as specifiers of dedicated FPs between NP and NumP (see Cinque 2005, 2010 for a similar analysis). Accordingly, the structure of a DP with a modifying adjective in SA is shown in (9).⁶

⁶In this article, we maintain the view that a modifying adjective projects its own projection (AP). Others assume that adjectives phrases are contained with DegP (see Kremers 2003) or even separate DPs (Fassi Fehri 1999). This does not affect the analysis developed in this article.



Let us assume for the sake of argument that a modifying adjective (A^0) bearing [μ GEND] and [μ NUM] features probes downwards to value its unvalued features. Assuming the structure in (9), it can be proposed that A^0 (the head of AP) finds N^0 , which acts here as a goal that values A^0 's [μ GEND] feature. As for [μ NUM] carried by A^0 , A^0 is forced to wait under the merger of Num^0 that bears the matching [μ NUM] feature (recall that NP does not carry a matching [NUM] feature). This implies that A^0 probes upwards in order to value its [μ NUM] feature by Num^0 . Assuming that the [μ GEND] and [μ NUM] features on A^0 act as separate probes, we propose that the probe in Arabic grammar does not have to c-command its goal (contra Chomsky 2001). In our particular case, A^0 (or AP) does not c-command NumP .

The same thing takes place with respect to valuing the [μ DEF] feature on A^0 . As shown in (10), the definiteness status of the AP should be morphologically equal to that of the head noun (we modify this statement later).

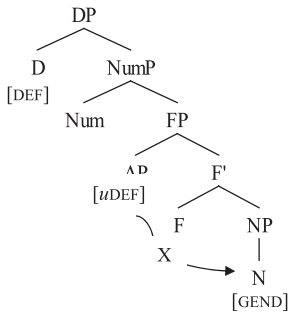
- (10) a. ?al-fata:t-u ?al-dʒami:l-at-u
 DEF-girl.F-NOM DEF-beautiful-SG.F-NOM
 'The beautiful girl'
- b. fata:t-un dʒami:l-at-un
 girl.F-NOM beautiful-SG.F-NOM
 'A beautiful girl'

Following Ouhalla (2004), Kramer (2010) proposes that [DEF] is carried by D^0 in Semitic languages. Assuming this proposal, it can be advanced that A^0 enters into an Agree relation with D^0 , resulting in valuing the [DEF] feature on A^0 . Specifically, D^0 enters the derivation endowed with an interpretable [-DEF] or an interpretable [+DEF] feature. The [-DEF] feature on D^0 gives rise to an indefinite interpretation in which case the DP surfaces without a definite article (or it is attached to a phonetically unpronounced indefinite determiner),⁷

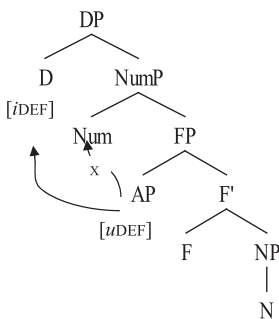
⁷The categorial status of the nunation marker (-n) that is attached to indefinite nouns in Arabic is controversial. On the one hand, Fischer and Rodgers (2002) and Ryding (2005) treat it as an indefinite marker. On the other, Fassi Fehri (1993) argues that it is akin to a possessive marker. Jarrah and Zibin (2016), however, argue that the nunation marker in Najdi Arabic is a placeholder that fills D^0 when it is not occupied by the definite article or a personal pronoun. In their analysis, filling D^0 with the nunation marker is forced by the effects of the

whereas the [+DEF] feature on D⁰ is read off in the interface as a definite interpretation; the DP in the latter cases surfaces with the definite article (unless it is inherently definite as the case of proper nouns). Following the assumption that the definiteness article on the modifying adjective *ḍ̣ami:l* ‘beautiful’ does not contribute to the interpretation of the whole DP, it can be advanced that the A⁰ *ḍ̣ami:l* is endowed with [*u*DEF]. The A⁰ *ḍ̣ami:l* starts searching for a goal carrying a matching [DEF] feature. Let us propose that A⁰’s probing starts downwards. A⁰ finds N⁰ which, however, does not carry a matching [DEF] feature. Consequently, the A⁰ *ḍ̣ami:l* shifts its probing domain to a c-commanding material (upon their merger). Upon the merger of D⁰, the A⁰ *ḍ̣ami:l* locates D⁰ and establishes an Agree relation with it. This Agree relation results in the valuation of A’s [*u*DEF] feature. As a Phonological Form (PF) reflex of this valuation, *ḍ̣ami:l* is prefixed with the definite article when D⁰ bears [+DEF] or without a definite article when D⁰ bears [-DEF]. This can be schematically shown stepwise in the tree structures in (11).

- (11) a. First Step: A⁰ probes N⁰ but no valuation of A’s [*u*DEF] feature takes place.



- b. Second Step: A⁰ flips its probing domain looking for c-commanding elements with a matching [DEF] feature.



However, although the above discussion shows that probing in Arabic can take place upwards or downwards, A’s probing of N⁰, Num⁰, and D⁰ does not in fact determine whether there is a priority for downward probing over upward probing, or vice versa.

postulated Head D⁰ Condition (HDC), which requires the head D⁰ to be overtly filled (see Ayoub 1991 for further evidence that the nunation marker may not be an indefinite marker).

For instance, it is not clear so far whether A^0 probes upwards, first locating Num^0 , and then shifts downwards, to probe N^0 when it does not find a c-commanding goal that can value its $[\text{UGEND}]$ feature, or vice versa. An anonymous reviewer mentions that Agree in (11) would follow without dynamic search spaces if $[\text{uNUM}]$ only probes up and $[\text{UGEND}]$ only probes down. However, as we show below, dynamic search space is indeed present in Arabic grammar. Our evidence comes from the fact that modifying adjectives may agree in definiteness with a noun that they do not semantically modify, enforced by the presence of this noun in their c-command domain. We also show that modifying adjectives may agree with a c-commanding element when their search domain does not involve an element with a matching $[\text{DEF}]$ feature. To be precise, a probe may change its search space over the course of the derivation when its feature is not valued by a c-commanded element. Although all instances we provide here show that $[\text{uNUM}]$ probes up and $[\text{UGEND}]$ probes down, we do not have conclusive evidence that $[\text{uNUM}]$ *only* probes up and $[\text{UGEND}]$ *only* probes down.

In what follows, we attempt to show that downward probing has a priority over upward probing in Arabic. This becomes clear when the valuation of $[\text{uDEF}]$ feature on A^0 within construct state nominals (CSNs) is taken into consideration.

4. PROBING CONSTRAINTS WITHIN CONSTRUCT STATE NOMINALS

So far, we have claimed that a probe may switch its probing domain (i.e., it probes upward) when there exists no goal that carries a matching valued feature within its c-command domain. Evidence that supports this proposal comes from facts of adjectival concord within the construct state nominal (CSN) in SA. In a CSN, two nouns are juxtaposed to form a genitive relationship, as shown in example (12).

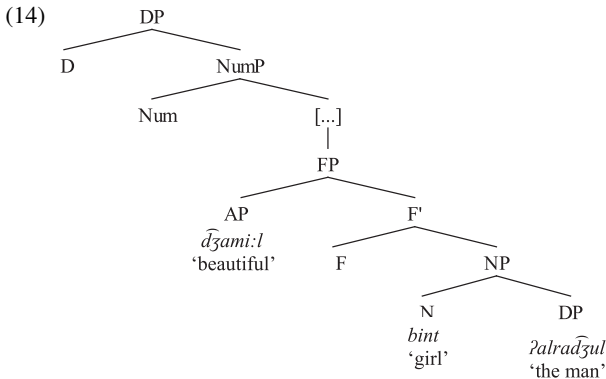
- (12) bint-u ?al-radʒul-i ?al-dʒami:l-at-u
 girl-NOM DEF-man-GEN DEF-beautiful.SG-F-NOM
 ‘The man’s beautiful daughter’

One primary property of CSNs in Arabic is that the head noun (i.e., the noun that appears first) cannot be prefixed with a definite article even if it is understood to be a definite element. In fact, it is the definiteness status of the DP possessor *?alra-dʒuli* ‘the man’ (the second part of the CSN in (12)) that specifies the definiteness status of the entire construct. For instance, the entire CSN in (12) is interpreted as a definite element because the DP possessor is definite. If the DP possessor is indefinite, the entire construct is interpreted as an indefinite object, as shown in (13).

- (13) bint-u radʒul-in dʒami:l-at-un
 girl-NOM man-GEN beautiful.SG-F-NOM
 ‘A man’s beautiful daughter’

All other interpretations, for example, the DP possessor is definite and the possessum (the head noun) is indefinite, are impossible. The two members of a CSN should either both be definite, or both indefinite.

According to Shlonsky (2004), one of the detailed accounts of the derivation of CSN in Semitic languages including Arabic (see also Ritter 1991, Fassi Fehri 1993, Siloni 1997, Shlonsky 1997, Benmamoun 2000, and Sichel 2002), a CSN like the one in (12) has the following syntactic structure:



Like cases of simple DPs, nominal modifiers enter the derivation as specifiers of functional phrases (FPs) that project between NP and NumP (see Shlonsky 2004).

One important fact shown in (14) is that the DP possessor merges as a complement of N^0 . Shlonsky (2004: 1503–1505) mentions that in CSNs “a noun or CS-head [the head noun] is left-adjacent to a noun phrase or annex [the DP possessor]”, and that the head noun of CSN is “a genitive Case-assigning head”. The head N^0 assigns Genitive Case to the DP possessor, accounting for the fact that the possessor is always assigned genitive Case, as shown in (15).

- (15) bint-u ʔal-raḍ̣zul-i-/*u/*a ʔal-ḍ̣ami:l-at-u
 girl-NOM DEF-man-GEN/*NOM/*ACC DEF-beautiful.SG-F-NOM
 ‘The man’s beautiful daughter’

Shlonsky (2004: 1505) argues that the assignment of the genitive case by N^0 to the DP possessor derives the ‘freezing’ effect of construct state nominals; “the fact that the complement of N^0 is never moved away from the head N^0 . The lack of adjectival intervention, that is, the impossibility of positioning an adjective immediately following the head noun, is a direct consequence of this”. For instance, the example in (16) is ungrammatical, since a modifying adjective intervenes between the head noun and the possessor.⁸

⁸Many researchers have explored how CSN constructions in Arabic noun phrases are derived and linearized (see Bardeas 2009 for an overview). Some claim that the DP possessor merges as a specifier of NP that includes the head noun (Mohammad 1999); others that it merges as a complement of N^0 . We adopt the latter view, given its straightforward account of the genitive case on the DP possessor and the strong adjacency between the DP and N, and given that it economizes several movements within the CSN. Neither view affects our analysis of the agreement of the nominal modifiers with the head noun, given that we claim that the inner structure of elements assigned genitive case is opaque to outer probes.

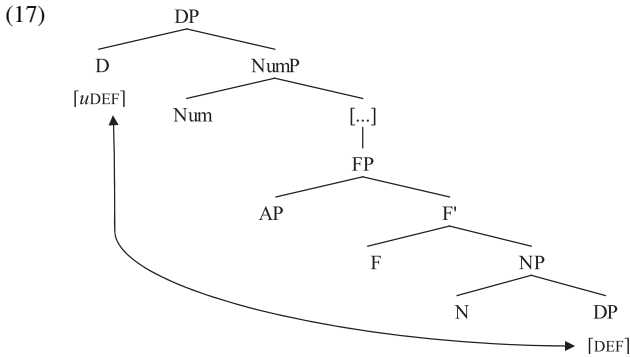
- (16) *bint-u (?al-)ḍʒami:l-at-u ?al-raḍʒul-i
 girl-NOM DEF-beautiful.SG-F-NOM DEF-man-GEN
 ‘The man’s beautiful daughter’

Under this view of the derivation of CSNs, there are two possible goals that can value the [*u*DEF] of A⁰ *ḍʒami:l* as they bear a [DEF] feature, namely D⁰ that heads the whole structure, and the DP possessor *?alraḍʒul* ‘the man’.⁹ Given the fact that A⁰ *ḍʒami:l* expresses the same definiteness value of the DP possessor on the surface, it can be proposed that A⁰ *ḍʒami:l* enters into an Agree relation with the DP possessor rather than the head D⁰. However, this line of analysis predicts that the higher D⁰ can be endowed with an independent [DEF] feature that is different from that of the DP possessor.

This prediction is not borne out: the definiteness specification of the higher D⁰ draws on the definiteness content of the DP possessor, an observation that has generated much debate in the literature. One main view in this regard is Borer’s (1988, 1996) proposal that the first member of a CSN is not specified for (in)definiteness, which it acquired through percolation of (in)definiteness feature of the DP possessor after merger that feeds LF. Given that percolation is reinterpreted as an instance of an Agree relation, in the latest minimalist literature, it can be proposed that the tight relationship between the definiteness specification of the higher D⁰ and the definiteness content of the DP possessor arises because the higher D⁰ itself enters the derivation with an interpretable but unvalued [DEF] feature. Pesetsky and Torrego (2007), and several other colleagues, offer evidence in favour of the separation of valuation and interpretability. Under their account, an interpretable feature can be unvalued at first Merge (and a valued feature can be uninterpretable). Based on the fact that the higher D⁰ is a functional projection that should have some interpretable content (see Chomsky 1995 for the assumption that functional phrases without interpretable content should be barred from the grammar), we propose that the higher D⁰ has an interpretable, yet unvalued feature of [DEF]. Accordingly, D⁰ must act as a probe, looking for valuing its interpretable content by a matching feature on another head.

On the one hand, if we allow D⁰ to probe downward, it will find the DP possessor in the complement position of NP, as shown in (17):

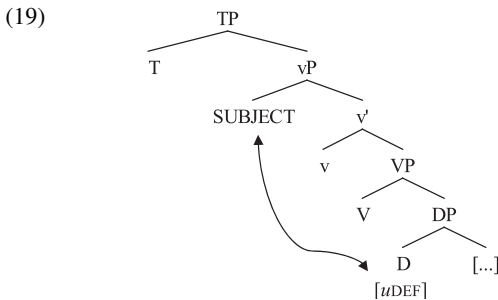
⁹There are two primary proposals on how a CSN is linearized. The first assumes that N⁰ raises to the highest nominal-internal head position, moving through all intervening heads such as Num⁰ (see, e.g., Ritter 1991, Siloni 1997, Sichel 2002). The second proposal argues that the fact that N+DP precedes all nominal modifiers arises because the N⁰ and the DP possessor move as one unit, to the outer specifier position of FP which harbours the lowest AP, “merging the next AP in the next specifier up and then snowballing upwards the entire phrase below the merged adjective” (Shlonsky 2004: 1487). Although the current article adopts the phrasal movement analysis in generating the word order of a CSN, it should be noted that neither proposal affects our account of the dependencies between AP and the relevant head. That is because under head movement, APs hold the same behaviour apart from the view that they are right-adjointed to the nominal spine, something that does not affect their probing.



The DP possessor enters into an Agree relation with D^0 , resulting in the valuation of the interpretable $[uDEF]$ feature on the latter by the D^0 head of the DP possessor. This relation between D^0 and the DP possessor accounts for the association of the definiteness specification of the entire DP with that of the DP possessor.

On the other hand, if we allow the higher D^0 to probe upwards as in (19), unintended readings arise, as D^0 will agree with other elements within the verbal extended projection. For example, under this second option, nothing would prevent D^0 from agreeing with the indefinite subject, as in (18), resulting in a wrong interpretation:

- (18) ja:hada radʒul-un wa:lid-a ʔal-fata:t-i
 see.PST.3SG.M man-NOM father-ACC DEF-girl-GEN
 The unintended interpretation: ‘A man saw a woman’s father’.
 The intended interpretation: ‘A man saw the woman’s father’.



Since the subject and the DP object are included in the same phase (v^*P), D^0 would agree with the indefinite subject, contrary to fact. Following this line of analysis, we have evidence that uD (unvalued definiteness) in Arabic probes downward, which allows us to predict the right specification of the definiteness value of the higher D^0 within a CSN.

As to why the definite article does not surface when D^0 's uD is valued as definite in CSNs, we refer the reader to Benmamoun and Lorimor's (2006: 1) account according to which the definite article does not surface on the first member of a CSN as an expression of uD 's valuation due to “the alternative forms of spelling out features at the PF interface”. Following Benmamoun (2000), Benmamoun and Lorimor (2006: 19) argue that the merger of the members of the CS “allows the last member to spell out the definiteness feature of the first member”, and also mention that the

definiteness marker appears on the adjective due to the fact that the latter “has its own definiteness marker because it is not part of the CS complex; it can only have its definiteness feature spelled out by affixation, so the definiteness marker always occurs with adjectives that agree with the CS”.

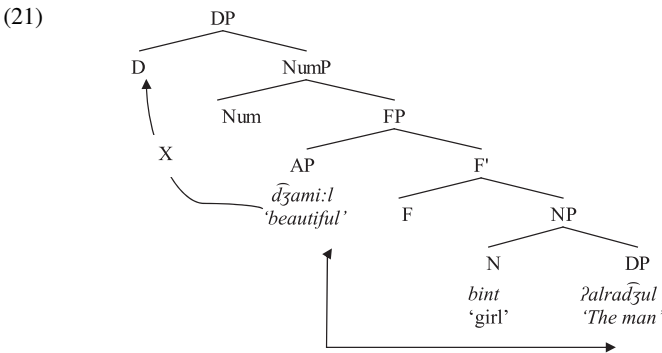
At this stage, the discussion pertaining to valuation of the modifying adjective’s [DEF] feature is worth clarifying. Two options can be pursued. Firstly, the adjective probes upwards. In such cases, the adjective should wait until the unvalued feature of [DEF] on D^0 is valued. Although this analysis would be conceptually true, since the adjective agrees with what it modifies semantically, it is syntactically less desirable, as it presupposes that uD probes differently when it appears on adjectives. As we have just shown, uD on D^0 should start probing downwards, otherwise an ill-formed interpretation is generated. Given the pattern of probing of uD on D^0 (see (19)), we assume that uD first initiates downward probing. This implies that A^0 *ḍẓami:l* in (13) agrees with the DP possessor rather than the higher D^0 .

In order to account for why A^0 agrees with the DP possessor in CSNs but with the higher D^0 in simple nouns phrase, we propose that the probing dynamic is constrained in Arabic grammar. Probes in Arabic are not free to search in both directions. uD is first allowed to probe downwards. If the downward space does not have a match, uD can flip its probing upwards, upon the merger of the c-commanding material. We propose the following constraint, which regulates the implementation of probing directionality.¹⁰

(20) The Probing Dynamics Constraint (PDC):

Upward probing only obtains when downward probing is not sufficient to value the probe’s uF .

In CSNs, the modifying adjective agrees in definiteness with the DP possessor which carries a [DEF] feature and falls within its c-command domain; this is schematically shown in (21).



¹⁰Carstens (2016: 2) allows delayed valuation to take place unless a point of transfer is reached. In such cases, the derivation of the relevant structure crashes if uF is not valued owing “to unclarity as to how it should be pronounced”. At this point, we have no evidence whether the unvalued feature would lead the derivation to crash if it were not valued prior to transfer, or whether it would be assigned the default value (along the lines of Preminger 2014). Either way, this does not affect our analysis.

The position of the DP possessor within the *c*-command domain of AP prevents the latter from agreeing with the head D^0 that bears a [DEF] feature, because of the probing dynamics constraint (PDC). This results in the modifying adjective expressing the definiteness value of the DP possessor even if it does not modify it semantically.

Some may wonder why downward probing is biased over upward probing to operate first in the grammar.¹¹ Following proposals by Rezac (2003) and Béjar and Rezac (2009), it can be assumed that downward bias results from the interaction of Agree and cyclicity of structure building. Once a probe bearing unvalued content is merged into the structure, such content should be valued as soon as possible as a direct effect of the Earliness Principle, which requires a feature to probe as early as possible (see Pesetsky and Torrego 2001). This results in a preference for a first-merged goal which is *c*-commanded by the probe (and closer to the relevant probe) over other goals that are neither *c*-commanded by the probe nor closer to it.

One complication arises here: why does the DP possessor not value A^0 's remaining unvalued features? The DP possessor (carrying a matching [NUM] feature) does not value the [*u*NUM] feature on the modifying adjective, despite that fact that A^0 's [NUM] is still unvalued when A^0 enters into an Agree relation with the DP possessor (in definiteness). As we have shown above, a modifying adjective within a CSN agrees in number and gender with the noun that it semantically describes rather than with the DP possessor, as shown in (22).

- (22) qis^ʕat-u ?al-?awla:d-i ?al-mumtiʕ-ah
 story.F-NOM DEF-boys-GEN DEF-interesting-SG.F
 'The boys' interesting story'

If the modifying adjective agrees with the possessor in number, as in (23), the construction is ungrammatical under the interpretation that the (plural) adjective 'interesting') describes the story (singular), rather than the boys (plural).

- (23) *qis^ʕat-u ?al-?awla:d-i ?al-mumtiʕ-i:n
 story.F-NOM DEF-boys-GEN DEF-interesting-PL.M
 Intended: 'The boys' interesting story'

Although the DP possessor falls within the *c*-command domain of the modifying adjective, the latter agrees in number and gender with the *c*-commanding NumP and the *c*-commanded N^0 , respectively. As for gender, there is no problem, as A^0 agrees with N^0 which bears a valued [GEN] feature, and N^0 is the closest *c*-commanded goal to A^0 . Regarding number, we propose that A^0 does not agree with the DP possessor because this DP is assigned genitive case by N^0 in such cases. As we mentioned above, the case of the DP possessor is invariant whereas the case of the whole construction is structural (see, for example, Shlonsky 2012). It is widely known that the complements of genitive case-marked elements do not enter into an Agree relation with outside elements; nor can they move (see Shlonsky 2004). In other words, the inner structure of elements assigned genitive case is an opaque

¹¹We thank an anonymous reviewer for raising this question.

domain for external probes.¹² This state of affairs forces A^0 to look upwards for other accessible goals, locating Num⁰ that carries the matching [NUM] feature.

In the following section, we provide supporting evidence for the fact that AP may agree in one feature with a noun that it does semantically modify. This observation supports our proposal that A^0 's agreement is subject to Agree operation that takes place in the narrow syntax.

5. SUPPORTING EVIDENCE

Our proposal that the [DEF] feature on a modifying adjective can be valued by an element that is not semantically described by the modifying adjective is supported by the value of agreement inflections appearing on the modifying adjective within a type of constructions discussed in Kremers (2003). As an illustration, consider the following examples of this construction (from Kremers 2003: 99–100), which we speak of, for ease of reference, as the DP-A-DP construction.¹³

- (24) a. raʔaj-tu ʔimraʔ-at-an ḍʒami:l-an waḍʒh-u-ha:
 see.PST-1SG woman-F-ACC beautiful.M.SG-ACC face.M-NOM-her
 Literal: 'I saw a woman beautiful her face'
 Intended: 'I saw a woman with a beautiful face.'
- b. ʔatat min balad-in maʔruf-at-in
 it.came from country.M-GEN.INDEF famous.SG-F-GEN.INDEF
 fidd-at hara:rat-i-ha:
 strength-F-GEN heat-GEN-its.
 Literal: 'It came from a country famous the strength of its heat'
 Intended: 'It (the heat) came from a country famous for (the strength of) its heat'
- c. li-l-ḍʒaza:ʔir-i ʔal-mutaqaddim-i ðikr-u-ha:
 to-DEF-islands.F-GEN DEF-preceding.M.SG-GEN mentioning.M-NOM-their
 Literal: 'To the islands preceding their mentioning'
 Intended: 'To the aforementioned islands'

¹²In subject–verb agreement, the verb agrees with the DP subject since this DP is not assigned genitive case, as shown in the following examples.

- (i) a. ðahaba ʔal-ʔawla:d-u
 go.PST.3SG.M DEF-boys-NOM
 'The boys went (away).'
- b. ʔal-ʔawla:d-u ðahab-u
 DEF-boys-NOM go.PST-3PL.M
 'The boys went (away).'

¹³The possessive pronominal clitic *-ha:* in (24a) is glossed as *her* since it refers back to the DP *a woman*, while it is glossed as *their* in (24c) since it refers back to *islands*. Inanimate plural entities in Arabic are referred to as [3SG.F] entities and invoke feminine singular agreement on the verb (when they are subjects). See Belnap and Shabaneh (1992) who label this pattern of agreement by inanimate plural entities as *deflected agreement* (see also Ryding 2005).

- d. bila:dun xursun riḏḏa:lu-ha
 countries silent.PL.M men-their
 Literal: ‘Countries silent their men’
 Intended: ‘Countries with silent men’

On the one hand, the modifying adjective *ḍami:lan* ‘beautiful’ in (24a) agrees in definiteness (and case) with the preceding indefinite DP *?imra?atan* ‘a woman’ even though it does not semantically describe it. On the other hand, it agrees in number and gender with the following DP *waḍḏuḏhaa* ‘her face’ ([SG.M]) that it does describe.¹⁴ This mixed agreement pattern expressed by the modifying adjective in a DP-A-DP construction is also shown in (24c). The participial adjective *mutaqaddimi* ‘preceding’ bears the same definiteness specification as the preceding DP *lḏḏaza:ʔir* ‘the islands’ (i.e., both are definite). Nonetheless, the adjective takes its number and gender inflection from the following deverbal DP *ḏikruḏhaa* ‘its mentioning’ which is [SG.M].

When the modifying adjective agrees in definiteness with the following DP, the resulting construction is ungrammatical, as in (25). Likewise, when the modifying adjective agrees in gender and/or number with the preceding DP, the resulting construction is ungrammatical, as in (26). Accordingly, a modifying adjective in a DP-A-DP construction shows split agreement patterns with two different entities (one of which it does not semantically describe). This essentially supports our proposal that a modifying adjective may agree in one feature with an element that it does not semantically describe.

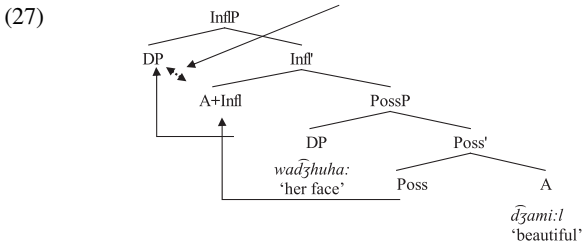
- (25) raʔaj-tu ?imra?-at-an (*ʔal)-ḏḏami:l-a waḍḏh-u-ha:
 see.PST-1SG woman-F-ACC *DEF-beautiful.M-ACC face.M-NOM-her
 Intended: ‘I saw a woman with a beautiful face.’
- (26) *raʔaj-tu ?imra?-at-an ḏḏami:l-t-an waḍḏh-u-ha:
 see.PST-1SG woman-F-ACC DEF-beautiful-F-ACC face.M-NOM-her
 Intended: ‘I saw a woman with a beautiful face.’

Kremers (2003) presents an analysis of a DP-A-DP construction. In the following paragraphs, we present his syntactic account of a DP-A-DP construction, which is shown to fit with our proposal that upward probing only takes place when downward probing is insufficient to value the probe’s uF. Indeed, Kremers (2003) considers the A-DP part of the DP-A-DP construction as two components of one Adjective Phrase.

¹⁴DPs that involve a possessive pronominal clitic are treated as definite DPs in Arabic, as in the following examples, which show that modifying adjectives must be prefixed with the definite article when they describe such DPs.

- (i) a. ja:had-tu s^ʔadi:qa-ha *(ʔal-)faransi
 see.PST-1SG friend-her DEF-French
 ‘I saw her French friend.’
- b. ʔakala min waḍḏbati-hi *(ʔal-)ḏa:rah
 eat.PST.3SG.M from meal-his DEF-spicy
 ‘He ate from his spicy meal.’

In other words, the expression $\widehat{d\bar{z}ami:l}an\ \widehat{wad\bar{z}huha}$: (lit. beautiful her face) in (24a) is an Adjective Phrase adjoined to the DP that includes the noun $\bar{?imra?atan}$ ‘a woman’. Following proposals by Abney (1987) and Zwarts (1992), Kremers (2003) treats this Adjective Phrase as a Degree Phrase dominated by an outer D^0 layer. His proposal states that the modifying adjective $\widehat{d\bar{z}ami:l}$ ‘beautiful’ is base-generated as a complement of $Poss^0$ that projects $PossP$ whose specifier is filled with the Deg-internal subject $\widehat{wad\bar{z}huha}$: ‘her face’.¹⁵ The modifying adjective $\widehat{d\bar{z}ami:l}$ then moves to the head of a postulated projection labeled Infl Phrase in order to pick up the agreement features, namely $uNumber$ and $uGender$, which $Infl^0$ bears. The DP $\widehat{wad\bar{z}huha}$: ‘her face’, in turn, moves to Spec,Infl Phrase so that it can agree with the modifying adjective, as shown in (27).



Afterwards, the modifying adjective $\widehat{d\bar{z}ami:l}$ moves to Deg^0 in order to receive its morphological form. The movement of the modifying adjective $\widehat{d\bar{z}ami:l}$ to Deg^0 while the DP-internal subject remains in the Spec position of Infl Phrase results in the modifying adjective appearing before the DegP-internal subject in the linear string ($\widehat{d\bar{z}ami:l} > \widehat{wad\bar{z}huha}$).

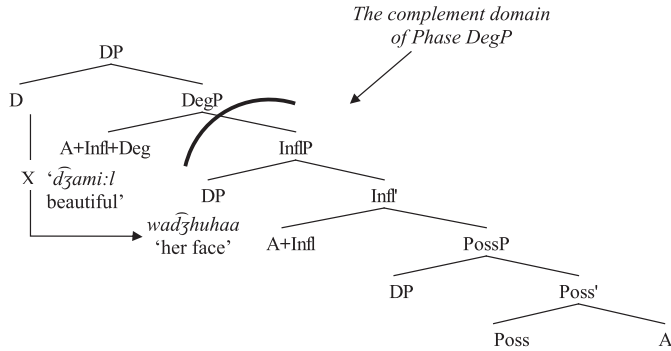
Kremers (2003) proposes that DegP is dominated by a DP layer whose head D^0 bears an unvalued $[DEF]$ feature, as shown in (29). Kremers argues that this D^0 cannot agree with the DP-internal subject because DegP is a phase (see Chomsky 2000). Because of the Phase Impenetrability Condition in (28), the D^0 that dominates DegP is unable to agree with elements which are located within the complement domain of Deg^0 .

(28) Phase Impenetrability Condition:

In phase α with head H, the domain of H is not accessible to operations outside α ; only H and its edge are accessible to such operations.

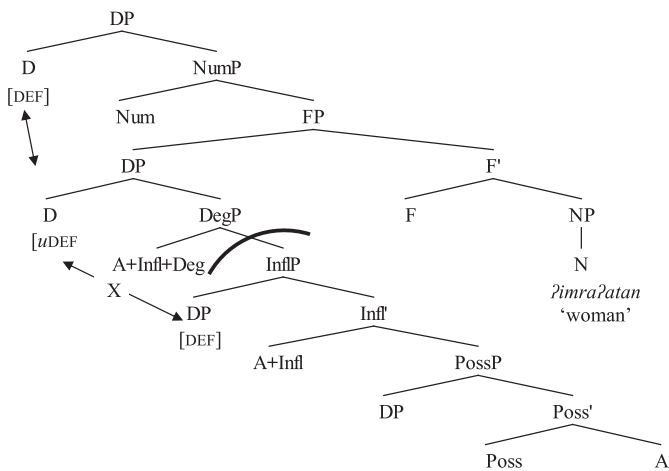
¹⁵Kremers (2003) labels the DP $\widehat{wad\bar{z}huha}$ ‘her face’, with which the adjective agrees in number and gender, as a Deg-internal subject. That is because this DP occupies the Spec position of Poss Phrase whose head assigns Nominative case to it.

(29)



Therefore, D^0 should wait until DP merges as a modifier with the container DP that includes *?imra?atan* ‘a woman’. In such cases, D^0 's [μ DEF] is valued by the higher D^0 which bears [DEF] feature, as shown in (30).

(30)



The assumption that DP *ḍami:lan waḍʒuħa:* (lit. ‘beautiful her face’) enters the derivation of the container DP as a modifier is supported by the fact that it can be safely dropped from the construction, as evidenced in (31).

- (31) ra?ajtu ?imra?-atan
 see.PST.1SG woman-F-ACC
 ‘I saw a woman.’

Additionally, DegP *ḍami:lan waḍʒuħa:* can occur with other adjectives that modify the same DP (see 32a–b).

- (32) a. ra?ajtu ?imra?-at-an faqi:ra-t-an ḍami:l-an
 see.PST.1SG woman-F-ACC poor-F-ACC beautiful.M-ACC
 wadḍʒ-u-ha:
 face.M-NOM-her
 Literal: ‘I saw a woman poor beautiful her face.’
 Intended: ‘I saw a poor woman with a beautiful face.’

- b. raʔajtu ʔimraʔ-at-an ḍʒami:l-an waḍḥ-u-ha:
 see.PST.1SG woman-F-ACC beautiful.M-ACC face.M-NOM-her
 faqi:ra-t-an
 poor-F-ACC
 Literal: ‘I saw a woman beautiful her face poor.’
 Intended: ‘I saw a poor woman with a beautiful face.’

The examples in (32) show that the A-DP string of the DP-A-DP construction acts syntactically as a modifier that is widely assumed to be part of the host DP (Ritter 1991, Siloni 1997).

In so doing, we challenge Bjorkman and Zeijlstra’s (2019) proposal for a *hybrid* directionality approach, whereby downward ϕ -agreement is parasitic on pre-existing upward Agree relations between probes and goals. Specifically, they claim that upward ϕ -agreement is independent of such specific requirements of the goal, that is, downward agreement is in all cases an instance of “(possibly incomplete) upwards valuation that is dependent on a separate independently-established UA [upward agree] relation” (p. 528). By contrast, the current article provides evidence that upward Agree is initiated either to complete incomplete downward Agree relations or to establish an Agree relation that a probe could not build with an element that it c-commands (because no element within its c-command search domain bears a feature matching its unvalued feature).

In view of this, the agreement between nominals and adjectival modifiers inside a DP that contains the two is achieved through a particular syntactic configuration that applies before spell-out. In other words, what appears as a nominal concord between a noun and a modifying adjective in SA is an outcome of the Agree relation between the two, established in the narrow syntax. This analysis, particularly with respect to instances of nominal concord inside simple DPs, is at variance with Norris’ (2014) recent account of nominal concord in Estonian. According to Norris, nominal concord that applies within the same extended projection is a morphological operation that takes place in the morphological components of sentence derivation (i.e., after spell-out); hence no specific syntactic configuration is needed for nominal concord to operate in the grammar. A thorough evaluation of Norris’s proposal using data from Arabic will be an interesting topic to pursue; we leave it for further research. However, as a preliminary note, we point to some initial evidence challenging Norris’ (2014) analysis, which states that all manifestations of nominal concord within the same extended projections should be viewed as purely morphological: the fact that some patterns of nominal concord in Estonian can be found in agreement patterns in the Arabic sentential domain. Such agreement patterns are widely assumed to follow from the Agree operation. For instance, Norris observes that one difference between nominal concord (as a morphological operation) and subject–verb agreement (which is a syntactic operation) is that nominal concord appears on specifiers, heads and adjuncts, whereas agreement in subject–verb agreement patterns only appears on heads. Norris (2014: 100) mentions that unlike subject–verb agreement “concord may be seen on heads (e.g., determiners, strong quantifiers), specifiers (e.g., numerals, demonstratives, possessors), and adjuncts (adjectives)”. However, this is not always true in Arabic, where some adverbs are

found to agree with the subject of the sentence. A case in point is the adverb *wahdah* ‘alone’ in SA as the examples in (33) show:

- (33) a. *ḏahaba* *ʔal-radʕul-u* *wahd-ah*
 go.PST-3SG.M DEF-man-NOM alone-3SG.M
 ‘The man went alone.’
- b. *ḏahab-at* *ʔal-fata:t-u* *wahd-ha*
 go.PST-3SG.F DEF-girl-NOM alone-3SG.F
 ‘The woman went alone.’

The agreement between the subject and the adverb in (33) can be interpreted as an argument that agreement outside DP is not restricted to heads but can also target adjuncts, as is the case inside DP. Under the Agree-based approach, the adverb *wahdah* is supposed to carry a set of $u\phi$ -features which are valued by the subject.

Another difference between nominal concord (as a morphological operation) and agreement (as a syntactic operation) is that the latter is dependent on the type of case that the goal bears, whereas nominal concord takes place irrespective of the case value of the elements that show agreement. For example, in Estonian, only nominative arguments can control verb agreement (Norris 2014: 101), as shown in (34).

- (34) a. *Õue-s* *māngi-s* *lapsi*
 yard-INE play-PST.3SG children.PL.PAR
 ‘There were children playing in the yard.’
- b. **Õue-s* *māngi-si-d* *lapsi*
 yard-INE play-PST-3PL children.PL.PAR
 Intended: ‘There were children playing in the yard.’

On the one hand, in (34b), the partitive plural *lapsi* (‘children’) does not give rise to a plural verb; on the other hand, concord is not connected to the assignment of a particular case. Yet, this difference between nominal concord and agreement in Estonian should not be taken as a cross-linguistic argument that concord and agreement patterns outside DPs must be made in two different levels of grammar.¹⁶ Indeed, complementizer agreement in Jordanian Arabic (which shares similar nominal concord facts with SA) shows that C^0 *ʔinn* can agree with the subject that is assigned (abstract) nominative case or with the object that is assigned (abstract) accusative case, depending on closer c-command. This can be seen in the examples in (35), from Jarrah (2020).

- (35) a. *ʔabu:-i* *fakkar/ʔistayrab/hizin* *ʔinn-uh*
 father-my believed/surprised/regretted.3SG.M COMP-3SG.M
ʔil-walad *sarag* *ʔis-sijja:rah*
 DEF-boy stole.3SG.M DEF-car
 ‘My father believed/surprised/regretted that the boy stole the car.’

Jarrah 2020:146

¹⁶Norris (2014) discusses another aspect that distinguishes nominal concord from subject–verb agreement in Estonian, namely the number of loci of agreement expression, but we leave an evaluation of this aspect using data from Arabic for further research.

- | | | | | |
|----|---|------------------------------------|------------|---------------|
| b. | ʔabu:-i | fakkar/ʔistaʔrab/hizin | | ʔinn-ha |
| | father-my | believed/surprised/regretted.3SG.M | | COMP-3SG.F |
| | ʔil-binit | sarag-at | | ʔis-sijja:rah |
| | DEF-girl | stole.3SG.F | | DEF-car |
| | ‘My father believed/surprised/regretted that the girl stole the car.’ | | | |
| c. | ʔabu:-j | fakkar | ʔinn-ha | sijja:rah |
| | father-my | believe.PST.3SG.M | COMP-3SG.F | car.F |
| | sarag-u | ʔiz-zulum | | |
| | steal.PST-3PL.M | DEF-men | | |
| | ‘My father believed that the car, the men stole.’ | | | |
- Jarrah 2020: 154

In (35a), *ʔinn* agrees with the subject *ʔilwalad* ‘the boy’, as evidenced by the fact that the inflectional suffix that *ʔinn* bears (i.e., *-uh* [3SG.M]) is the same Φ -content as the subject. The subject is argued to be assigned Nominative case by T^0 while the former is located in Spec,vP. Given the Strong EPP feature on T^0 , the subject moves to Spec, TP where it enters into an Agree relation with *ʔinn* (see Jarrah 2017a,b). Sentence (35b) displays the same fact with a feminine subject. On the other hand, in (35c), *ʔinn* agrees with the fronted object *sijjaarah* ‘a car’ which is interpreted as a contrastive focus. *ʔinn* carries an inflectional suffix that covaries in Φ -content with the fronted object (i.e., *-ha* [3SG.F]) rather than with the subject. The agreement between *ʔinn* and the closer subject takes place even if the subject appear preverbally, as shown in (36):

- | | | | | |
|------|--|-------------------|------------|-----------|
| (36) | ʔabu:-j | fakkar | ʔinn-ha | sijja:rah |
| | father-my | believe.PST.3SG.M | COMP-3SG.F | car.F |
| | ʔiz-zulum | sarag-u | | |
| | DEF-men | steal.PST-3PL.M | | |
| | ‘My father believed that the men stole the car.’ | | | |

Note the fronted object in (35c) and (36) is widely argued to be base-generated as a complement of V^0 (which is an accusative case-assigner in Arabic grammar; Fassi Fehri 1993, among others). The focused object moves to Spec,Focus Phrase in the left periphery. In such cases, the movement of the object to the left periphery is supported by the fact that the focused object is paired with a gap in its base-position (see Ouhalla 1997). Therefore, it can be proposed that C^0 's agreement in Jordanian grammar takes place regardless of the case value of the elements that agree with it.

Our findings point in a direction that refutes Baker’s (2008) own assessment that Arabic sets the second value of his *Direction of Agreement Parameter* which is proposed to capture how different languages specify their Agree domains (F = Functional head).

- (37) *The Direction of Agreement Parameter* (Baker 2008: 215)
- (i) F agrees with DP/NP only if DP/NP asymmetrically c-commands F, or
 - (ii) F agrees with DP/NP only if F c-commands DP/NP, or
 - (iii) F agrees with DP/NP only if F c-commands DP/NP or vice versa.

The current article shows that probes in Arabic may or may not asymmetrically c-command their goals.

6. CONCLUSION

The current article has tackled adjectival concord in Standard Arabic. Based on facts from adjectival concord in simple DP and construct state nominals (CSNs), we have shown that upward Agree takes place only when downward Agree is insufficient to value the probe's uF. To account for this state of affairs, we propose a probing dynamics constraint (PDC) stating that upward probing only obtains when downward probing is not sufficient to value the probe's uF. On the one hand, our PDC is in line with proposals that allow upward probing to take place when downward probing fails to value all of the unvalued features of a probe (e.g., Béjar and Rezac's 2009 cyclic Agree and Carstens's 2016 delayed valuation). On the other hand, our evidence challenges proposals that do not allow downward probing altogether (Zeijlstra 2012) or view it as parasitic on upward probing (Bjorkman and Zeijlstra 2019). Additionally, this article provides an empirical argument that DP-internal concord in Arabic applies before the spell-out point.

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