Definiteness of adjectives in Arabic DPs*

Dhari AlOtaibi[a][**] · **Shamlan AlQenaie**[b][***] · **Soonhyuck Park**[a][****]
(Gulf University for Science and Technology[a] · **Kuwait University**[b]**)**

AlOtaibi, Dhari, Shamlan AlQenaie, and Soonhyuck Park. 2023. **Definiteness of adjectives in Arabic DPs.** *Linguistic Research* 40(3): 431-462. The internal structure of the DP has long been a topic of debate in the study of Modern Standard Arabic. This is due not only to the comprehensive agreement in ϕ-features, Case, and definiteness between the adjective and its head noun, but also to the difference in meaning depending on the relative placement of the adjective in relation to the noun within the DP. Previous studies have proposed two distinct basic structures for Arabic DPs, employing the notions of Agree or Feature Checking. However, these operations do not necessarily trigger the displacement of syntactic objects in the derivation, nor do they adequately capture the correlation of semantic patterns with their relevant syntactic derivations. This paper argues instead that both patterns of the Arabic DP can be derived from a unified syntactic structure and treats the agreement in definiteness differently from that of ϕ-features and Case. The presence or absence of agreement in definiteness, considering two possible positions of the adjective and their interpretations of the DP, are accounted for in terms of the parametric variations of the feature on the head D within the framework of the Minimalist Program. **(Gulf University for Science and Technology · Kuwait University)**

Keywords DPs, Modern Standard Arabic, agreement, definiteness, feature inheritance, Minimalist Program

1. Introduction

The placement of adjectives in the DP and the presence or absence of agreement in definiteness between the adjective and the head noun in Arabic have been subjects of

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**   First author
***   Second author
****   Corresponding author

debate from many perspectives. This debate arises primarily because the agreement in definiteness relies on their mutual dependence with ϕ-features and Case, and this happens only when the adjective is positioned after the head noun in Modern Standard Arabic SA. Definiteness has, however, been treated differently from ϕ-features and Case by virtue of its unique semantic attributes and is encoded by its distinctive functional category DP. The nature of the head D is to identify the semantic features of definiteness, specificity, familiarity, or inclusiveness of the nominal expression in its entirety. A dual realization of the definite article on both the adjective and the head noun within the Arabic DP thus needs to be justified independently from the agreement in ϕ-features and Case.

Languages such as Greek, Hebrew, Swedish, Romanian, Norwegian, and French also exhibit similar instances of double articulation, determiner spreading, or determiner doubling in nominal expressions. However, their analyses of split DPs (Alexiadou et al. 2007; Bardeas 2009), reduced relative clauses (Larson and MaruŠic 2004; Cinque 2010), and appositive DPs (Androutsopoulou 1995; Lekakou and SzendrÖi 2012) do not apply to the cases of SA due to both morphosyntactic and semantic considerations. A parametric approach to the structure of DPs and their syntactic derivations in SA is necessary to accommodate language-specific phenomena and their relevant facts to the syntactic and semantic correlations.

Previous analyses for the agreement in definiteness of DPs in SA have employed the notion of Agree in terms of strong/week or interpretable/uninterpretable features on the heads of functional categories to elucidate the agreement between the head N and the adjective, as well as their relative placement within the DP (Fehri 1999; Kremers 2003). However, the operation of Agree in the Minimalist Program MP cannot account for the two different positions of the adjective with respect to the head noun in the DP because it does not necessarily trigger the displacement of syntactic objects in the derivation. Furthermore, these analyses have unavoidably proposed two distinct basic structures for DPs in SA, resulting in a situation that ultimately proves to be uneconomical in the minimalist idea of the derivation in the computational system. Moreover, they treat the definiteness the same way as Case and ϕ-features without providing any justification. They do not even capture the correlation between the semantic patterns of the dual determiners and their relevant syntactic derivations within the DP.

It is generally agreed that the interpretation of the dual determiners in SA is similar to that of the single determiner in languages. This indicates that the adjective in SA does not carry its own semantic features but instead shares the same interpretation of

definiteness with the head noun utilizing feature sharing, spreading, duplication, or inheritance, all of which are morphologically realized at the PF interface. This paper holds that both positions of the adjective in the DP be derived from a unified syntactic structure. The agreement in definiteness of the DP can be accounted for within the framework of the pair Merge in the MP (Chomsky 2013, 2015). This paper aims to describe two patterns of Arabic DPs with respect to agreement in φ-features, Case, and definiteness, examine previous analyses of dual determiner constructions in SA and other languages, and propose an alternative approach that not only accommodates the syntactic derivations of the two types of DPs in SA, but also addresses their relevance to semantic interpretations in a unified and systematic manner.

2. Agreement in definiteness

The nominal expression in SA consists of a noun stem and possibly an adjective with nominal reference. Its definiteness is realized by the morphosyntactic prefix or suffix attached to the head N. It becomes definite [+DEF] if marked with the prefix *al-* 'the' in *al-kitaab* 'the book,' or indefinite [-DEF] if marked with the suffix *-n* in *kitaab-n* 'a book,' as in (1).

(1) al-kitaab/kitaab-n
    def-book/book-ind
    'the book/a book'

When an adjective is included in the nominal construction of SA, it can appear either after or before the head noun in the DP.

(2) al-kitaab al-dʒdeed
    def-book def-new
    'the new book'
(3) dʒdeed al-kutib
    new   def-books
    'the new (one of the) books'[1]

The adjective *dʒdeed* 'new' can be positioned after the head noun *kitaab* 'book' in (2) or before *kutib* 'books' in (3). These two patterns of the nominal expression in SA have been referred to as postnominal and prenominal adjective constructions, respectively. The postnominal adjective construction is considered a typical form of adjectival modification in SA, where the adjective plays an attributive role for the head noun N.

The postnominal adjective differs from the prenominal adjective within the DP in that the former carries the same type of determiner D as the head N and the same values of ɸ-features and Case, whereas the latter does not.

(4) a. al-rajul-u   al-saʕid-u
        def-man.sg.masc-nom def-happy.sg.masc-nom
        'the happy man'
    b. bint-u-n   jammlat-u-n
        girl-nom-ind   pretty.fem-nom-ind
        'a pretty girl'

In (4a), the head noun *rajul* 'man' and its postnominal adjective *saʕid* 'happy' are both prefixed by the [+DEF] article *al-* 'the' and Case-realized in the form of the nominative suffix -*u.* They also share the same values of ɸ-features, exhibiting the features of number (singular) and gender (masculine). The agreement of the [-DEF] feature in definiteness of the DP can also be seen in (4b), where the noun *bint* 'girl' and its postnominal adjective *jameel* 'pretty' agree in that they are both suffixed by the indefinite marker -*n* 'a.'

(5) a. akbar-u   al-walad-i
        oldest-nom   def-boy-gen
        the oldest boy'
    b. dʒadeed-a   al-kutib-i
        new-acc   def-books-gen
        'the new (one in the) books'

In (5a, b), however, where the adjective *akbar* 'oldest' and *dʒadeed* 'new' are

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1   The postnominal adjective in DP is understood differently from the postnominal adjective. In this paper, it is interpreted as either a partitive genitive or superlative reading, depending on the context.

positioned before the head noun *walad* 'boy' and *kutib* 'books,' they do not agree in φ -features and Case, nor in definiteness. The prenominal adjectives can take the nominative -*u* (5a) or accusative Case -*a* (5b) and are entirely free from the agreement in φ-features and definiteness, while the nouns always take the genitive -*i* Case with the [+DEF] feature in definiteness.

The duplication of the definite article is also found in other languages. Greek in (6), Hebrew in (7), and Aromanian in (8) exhibit the agreement in definiteness when the adjective modifiers *kokino* 'red,' *yapot* 'nice,' and *lai* 'black' are all positioned behind the head nouns *vivlio* 'book,' *smalot* 'dresses,' and *stilo* 'pen.'

(6) to vivlio to kokino
     def book   def red
     'the red book'

(7) ha smalot ha yapot
     def dresses def nice
     'the nice dresses'

(8) stilo-lu lai-lu
     pen-def black-def
     'the black pen'   (Alexiadou 2014: (1)-(2) and (4))

However, these languages do not show similar patterns of agreement in definiteness to those in SA. As Alexiadou et al. (2007) reported, duplicating the definite article in French is observed only in the context of superlative adjectives.

(9) a. la   plus grand fille
        def most big   girl
     b. la   fille la plus grande
        def girl def most big
        'the biggest girl'   (Kayne 2008: (47))

The DP in (9a), which contains the adjective *grand* 'big' before the head noun *fille* 'girl,' has only one determiner *la* 'the' in the beginning. In contrast, the DP in (9b) has two determiners: one in the beginning and one before the postnominal adjective, following the pattern of N Adj.

Furthermore, the agreement in definiteness is restricted to the definite [+DEF] article, as demonstrated by the ungrammaticality of (10).

(10) *ena vivlio ena kalo
        ind book   ind good
        'a good book'   (Androutsopoulou 2001: (20))

As (10) shows, the indefinite article *ena* 'a' cannot be doubly applied to both the head noun *vivlio* 'book' and the postnominal adjective *kalo* 'good' in Greek.[2] Alexiadou and Wilder (1998) argued that duplicating indefiniteness is also possible in Greek.

(11) ena vivlio Ø   megalo
        ind book   (ind) big
        'a big book'   (Alexiadou and Wilder 1998: (58))

Their argument hinges on the postnominal adjective *megalo* 'big' agreeing with its indefinite [-DEF] head noun *ena vivlio* 'a book.' To support their analysis, the indefinite article for adjectives in Greek cannot be explicitly expressed and should instead be represented by the null feature Ø, as shown in (11).

Moreover, duplicating the definite article is not obligatory for the prenominal adjective construction in (12).

(12) a. to   megalo vivlio
           def big   book
        b. to   megalo to   vivlio
           def big   def book

DPs can be accompanied by only one definite article (a) or by two definite articles, one for the adjective and one for the head noun.

Considering the observed facts, the agreement in definiteness of DPs in SA is unique. The postnominal adjective agrees with its head noun, regardless of the types of

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2   The fact that duplication is limited only to the definite article is crucially related to the semantic issues, particularly for the interpretation of the adjective. See Fehri (1999), Alexiadou (2014), and AlOtaibi et al. (2022) for more.

definiteness, whether [+DEF] or [-DEF]. This differs from Greek and Hebrew, where the agreement is limited to the definite [+DEF], and French, which only applies to superlative adjectives. In SA, the definiteness also relies on mutual agreement in ɸ-features and Case with the head noun in the DP. However, the comprehensive agreement disappears when the adjective is positioned before the head noun. The relative placement of the adjective to the head noun N is also crucial for interpretation; the postnominal adjectives serves an attributive role for its preceding head noun, whereas the prenominal adjective conveys a partitive genitive or superlative reading, presenting a predicative role of adjectives in languages.
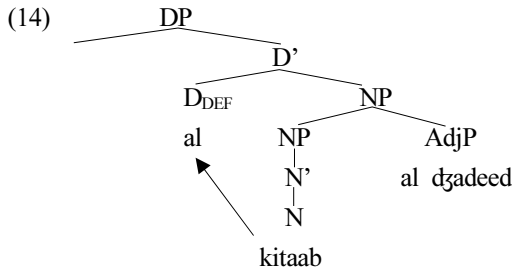
3. Previous approaches

The definite nominal expression of SA has been accounted for within the DP hypothesis, wherein the head N moves up to incorporate the head D of DP.
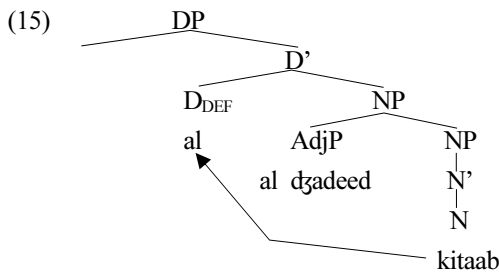
(13)
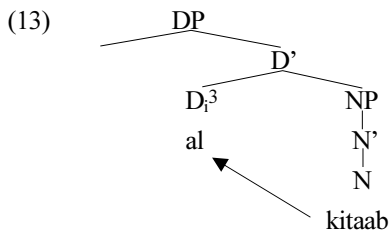
Mohammad (1988) and Fehri (1999) proposed that the head N *kitaab* 'book' rises to the [+DEF] determiner *al,* resulting in the [D N] complex *al-kitaab* 'the book' on the head D, as illustrated in (13).

This postnominal adjective construction, typical for adjectival modification in DP, is accounted for by assuming that the AdjP *al dʒadeed* 'the new' in (14) is right adjoined to the NP, yielding the sentence [NP NP AdjP] from (13) above and the head N *kitaab* 'book' moves to the head D *al* 'the,' as in (14).

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3   The subscript *i* is often used to identify the presence of a specific feature on the head D. In this case, it is [+DEF], which is expressed by *al* 'the.'

(14)

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              DP
        ┌──────┴──────┐
                     D'
              ┌───────┴───────┐
           D_DEF            NP
            al      ┌────────┴────────┐
                   NP              AdjP
                    │          al dʒadeed
                   N'
                    │
                    N
                  kitaab
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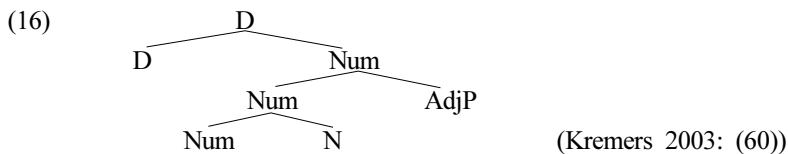
Another possible analysis for the postnominal adjective in SA is to have the AdjP left adjoin to the NP and employ the head movement of the head N over to the head D of DP from the basic order [NP AdjP NP] in (15).

(15)

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              DP
        ┌──────┴──────┐
                     D'
              ┌───────┴───────┐
           D_DEF            NP
            al      ┌────────┴────────┐
                  AdjP            NP
              al dʒadeed          │
                                 N'
                                  │
                                  N
                                kitaab
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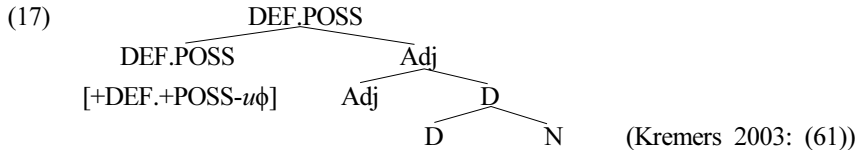
The AdjP is base generated to the left of the NP, and the head N of the NP joins with the head D, crossing over the AdjP, ultimately resulting in the reversed order of AdjP and NP.

In the previous analyses, Kremers (2003) proposed that the postnominal adjective be constructed by adjunction of the adjective to the right of the number phrase NumP, the head of which takes the noun N as its complement, as described in (16).

(16)

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              D
        ┌─────┴─────┐
        D         Num
              ┌─────┴─────┐
            Num         AdjP
         ┌───┴───┐
       Num     N            (Kremers 2003: (60))
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The structure of the prenominal adjective DP in (17) below was treated differently in a way that the head of the phrase is an adjective, which takes a projection of determiner

D as its complement. He further placed a functional projection of the dual features [DEF.POSS] on the top of the phrase, either of which is unvalued, serving as a probe to attract its matching valued feature within the complement DP by means of Agree in Chomsky (2008).

(17)

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                        DEF.POSS
          DEF.POSS              Adj
        [+DEF.+POSS-uφ]    Adj        D
                                   D      N       (Kremers 2003: (61))
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Kremers (2003, 2009) offered two independent basic structures for the analysis of DPs in SA; for the postnominal adjective DP in (16), the adjective is right adjoined to the Num, which contains the head N. The DP is not a projection of the adjective, but that of the noun, and the adjective is a full projection adjoined to the Num. For the prenominal adjective DP in (17), on the other hand, the adjective is the head of the construction and the noun N is its complement, while the features, [DEF] and [POSS], form a hybrid category [DEF.POSS]. When the feature [POSS] is interpretable, it obligatorily takes a DP as the complement of the adjective and assigns it the genitive Case. The uninterpretable φ-features on [POSS-uφ] can get their values by exchange from the interpretable φ-features of the c-commanding DP (Abney 1987; Lapointe 1993).

Mahmoud (2014), however, pointed out that the analysis of two independent features, [DEF] and [POSS] on one functional category, violates the endocentric property of building a phrase structure. He also raised a question of how the mechanism of the multiple features [DEF.POSS-φ] works with the DPs of SA; one of the features, [DEF] and [POSS], must have the value, while the other necessarily must not, to participate in the process of Agree with the complement DP in the sense of Chomsky (2008). But this opposite feature value distribution between [DEF] and [POSS] is unjustified. Moreover, when the [POSS] feature is unvalued, the adjective cannot take a DP complement without reason, and it cannot thus coexist with the φ-features on the functional head.

Unlike Kremers (2003), Mahmoud (2014) proposed the following syntactic structure for both prenominal and postnominal adjectives, from which the two possible DP structures are derived.
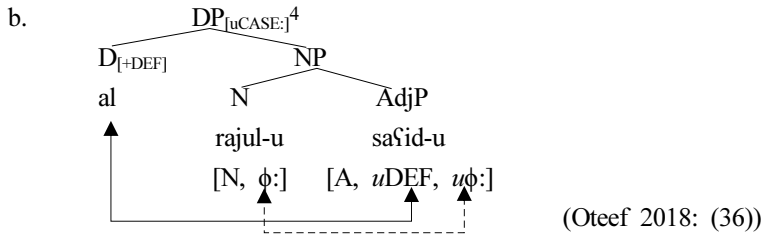
(18)
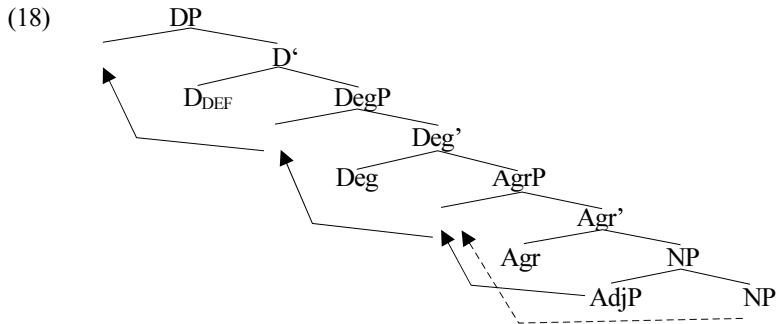
(Mahmoud 2014: (5))

In (18), the postnominal adjective is constructed by the movement of the NP to the specifier of AgrP (the dotted line), crossing over the AdjP and eventually yielding the [NP AdjP] order. The AdjP does not move simply because the feature [DEF] is weak in the sense of Chomsky (2008). The prenominal adjective is derived when the [DEF] feature of D is strong. The strong [DEF] feature triggers the movement of the AdjP all the way to the specifier of DP, stopping by the specifier positions on the way (the solid lines). Raising the AdjP to the specifiers of DegP and DP enables it to acquire the definiteness and function as a determiner.

What is essential in the analysis of Mahmoud (2014) is that both types of adjectival constructions are analyzed in a single syntactic representation by employing the [strong/weak] strength of the [DEF] feature. The two different constructions depend upon the feature of definiteness on the head D, such that the weak feature of definiteness on the D leads to the postnominal adjective, whereas the strong one leads to the prenominal adjective. His analysis can account for the two different types of DP construction in SA but does not capture the difference in meaning between them, which will be discussed more in 5.2.

Another analysis of the DP constructions in SA came from Oteef (2018), who claimed that the attributive adjective carries not only the $u\phi$-features, but also the [uDEF] feature, which are valued by the heads of NP and DP, respectively.
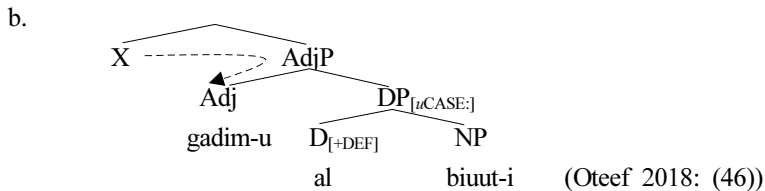
(19) a. al-rajul-u   al-saʕid-u
      def-man-nom def-happy-nom
      'the happy man

b.

$$DP_{[uCASE:]}{}^4$$

D$_{[+DEF]}$ NP

al

N   AdjP

rajul-u   saʕid-u

[N, φ:]   [A, uDEF, uφ:]

(Oteef 2018: (36))

In (19), the uφ-features of the adjective get valued by those of the head N, and the [uDEF] by that of the head D. Eventually, the values of the φ-features and [DEF] feature of the adjective are dependent upon the values of the two different heads, D and N, thereby exhibiting the agreement of both φ-features and definiteness in the DP.

For the DP with the prenominal adjective, however, he claimed that it is the construction of AdjP, the head of which takes the DP as its complement, as in (20).

(20) a. gadim-u   al-biuut-i

old-nom   def-house-gen

'the old (one in the) house(s)'

b.

X   AdjP

Adj   DP$_{[uCASE:]}$

gadim-u   D$_{[+DEF]}$ NP

al   biuut-i   (Oteef 2018: (46))

The Case of the prenominal adjective is determined by a head X outside the DP in an ECM-like fashion and is not marked for definiteness. At the same time, the NP always comes with the definite [DEF] feature on the D and is assigned the genitive Case $-i$.

The crucial differences of the structures of DP in (19) and (20) are the location of the AdjP and the presence/absence of the φ- and [DEF] features on the adjective. When the AdjP in the hierarchy of the DP is positioned inside the NP, both the head N and its modifier adjective are assigned the same Case, and the adjective gets its values of φ- and [DEF] features from those of the head D and N, respectively. When the AdjP

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4   The [uF] throughout this paper is a feature [F] which is uninterpretable and thus needs to be valued by its corresponding and c-commanding interpretable feature by Agree in the sense of Chomsky (1995)'s Full Interpretation.

is on the top in the structure, it lies outside the scope of the DP/NP that carries the Case feature and does not agree with the head N, simply because it does not have the relevant φ- and [DEF] features.

All the proposals have something in common: the agreement of definiteness is treated the same way as that of Case and φ-features. However, a recent version of the MP does not reserve a position for φ-features agreement and Case, nor does it retain the spirit of the endocentricity in the configuration of the syntactic structure. Unlike Case and φ-features, the multiple occurrences of determiner can be accounted for by the multiple occurrences of the head D in the nominal expressions, independently from the agreement of Case and φ-features. Furthermore, any of the previous proposals did not appropriately capture in the syntactic representations the different semantic interpretations of the adjective.

4. A unified structure

Previous analyses offered two independent syntactic structures: one for the prenominal adjective and the other for the postnominal one. However, we have seen that the two types of DP construction in SA are interrelated in morphosyntactic as well as semantic aspects. Mahmoud (2014) and Fakih (2017) proposed instead that the two different DP constructions be derived from a single syntactic structure for economical and natural theoretical perspectives. Mahmoud (2014) attributed the presence or absence of full agreement to the parametric variations of the features on the head D. Fakih (2017) employed the feature sharing mechanism for all unvalued features via one same valued feature. The location of the adjective with respect to the head noun N is dependent upon how the feature agreement occurs in the DPs.

There are several problems with the previous analyses. First, they used AgrP to account for the full agreement between the head N and its modifying adjective. However, AgrP has been abandoned simply due to its lack of syntactic or semantic significance. Given that the MP requires the computational system of human language to be as minimal as possible by eliminating all unnecessary steps and symbols, an analysis will be better if it can provide all the solutions without the unnecessary functional categories than the ones with them. Second, the feature strength of the head of the phrase also needs a more detailed justification. It is rare to see a case where the feature [DEF] on the head

D can be weak or strong in a random way. Third, for the prenominal adjective construction, the [DEF] feature on the head D should be strong, triggering the AdjP to move to the specifier of DP. However, the AdjP is left adjoined to the NP and cannot be subject to extraction from the adjunction site due to a violation of Condition on Extraction Domain CED in Huang (1982). Even though it is parametrically possible, it is not clear why the whole NP is not subject to the movement to the specifier of DP. Fourth, the AdjP undergoes the phrasal movement to the specifier positions of all functional categories, AgrP and DegP, on the way to the specifier of DP. This is ultimately a vacuous movement, yielding no significance in sound and meaning.

Oteef's (2018) proposal can partially solve these problems, by claiming that the postnominal adjective carries the uninterpretable ϕ- and [DEF] features, which receive their values from those of the heads N and D, respectively, regarding feature inheritance. In a recent version of the MP, however, copying the feature value for Full Interpretation is not a relevant option to the model of the computational system of human language. He claimed further that the agreement in ϕ-features, Case, and definiteness is determined by the two different positions of the adjective concerning the DP's hierarchical order. The prenominal adjective is positioned higher than the DP, such that it lies outside the scope of the Case feature of DP, while the postnominal adjective is inside the DP and carries the ϕ-features and [DEF] feature, which are all subject to the agreement with those of the head N.

This paper instead presents an alternative analysis of the internal structure of DPs, which can better account for the syntactic correlation between the prenominal and postnominal adjectives in the nominal expressions of SA and the semantic differences between the two constructions.

(21)   a.   DP   b.   α
              ⟋⎯⎯⎯⟍   ⟋⎯⎯⟍
            … AdjP …   DP   AdjP

Unlike the nominal expressions of English in (21a), this paper proposes the structure of (21b) for the internal structure of DP in SA, where the DP and the AdjP merge to form a new syntactic object SO α, which is further merged by the head D_i, as illustrated in (22).

(22)

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         D_i        α
              DP        AdjP
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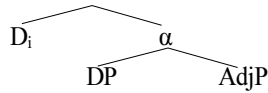
This unified syntactic structure for the DPs in SA can serve for both postnominal and prenominal adjective constructions and semantic differences (Al-Bataineh and Branigan 2020).

This analysis is based on the framework of the MP in Chomsky (2013, 2015, and 2019), notably the Labeling Algorithm LA. The MP has been designed to pursue the minimal computation of human language, such that the operation Merge is the most elementary and substantial tool in the system of language. The externalization results from the compliance of the LA in (23) and (24) below, which is subject to the interpretation conditions on interfaces.

(23) {X, YP} → X
(24) a. {XP, YP} → X or Y via IM
   b. {XP, YP} →   <ϕ, ϕ>   (Chomsky 2015: (5))

LA is known to effectively resolve the existing EPP and ECP problems based on the revised concept of introspection for labeling and the minimal search domain (Park 1999; Richards 2007). In addition to these advantages, it provides a new method for the relationship between merging and linearization in a completely different way from the existing labeling concept. (23) says that when a head X and a phrase YP merge, the head X becomes the label of the new SO, which is interpretable on interfaces. The idea is that when a head X and a maximal projection YP merge, the head X always projects to be the label, simply because the head is the only candidate identifiable for interpretation in the minimal search domain.

When two maximal projections, XP or YP, merge as in (24), there are two possible options for the new SO to be labeled. One is that either XP or YP is displaced by Internal Merge IM, triggering the rearrangement of the SOs in the structure and the head of the remaining phrase is entitled to be the label, as illustrated in (24a). The other option is a completely different type of labeling method from options (23) and (24a). It observes the principle of determinacy in Chomsky (2019) in that it neither requires IM, nor does it reflect the intrinsic characteristics of the taxonomy of units participating in the

operation of MERGE (Shim 2018; Goto and Ishii 2019).

When XP and YP merge, neither undergoes IM if they share the same prominent features, namely φ-features. As the LA in (24b) indicates, when XP and YP carry the same φ-features, the shared φ-features become the label of the SO, <φ,φ>.

(25)   a.

b.
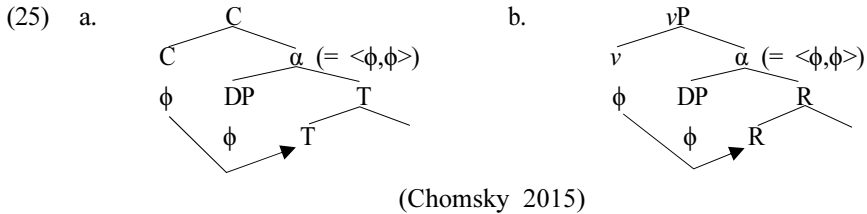
(Chomsky 2015)

As (25a) and (25b) show, the φ-features of the phase PH heads C and *v* are transmitted to the heads of their complements Tense T and Root R in terms of feature inheritance in Chomsky (2013, 2015). This eventually feeds the condition of (24b), such that the φ -features of DP and the inherited φ-features of T/R undergo the sharing algorithm, and the shared features <φ,φ> become the label of the new SO α.

Given the internal structure of (22) for the DPs in SA, this paper follows Butler (2004) and Chomsky (2008), who claim that not only the CP and *v*P but the DP can also serve as a PH in the computational system of human language. The feature [F] on the PH head D can thus be inherited to the head of its complement AdjP, as described in (26).

(26)
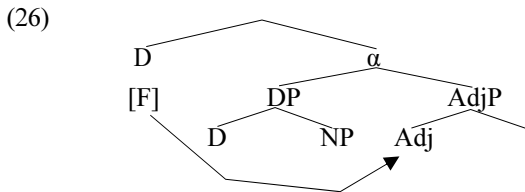
Depending on the type and property of the feature [F] on the PH head D, there are several options for the sequence of NP and AdjP and the possible agreement in φ -features, Case, and definiteness.

5. Analyses

5.1 Postnominal adjective DPs

Let us closely examine the possible derivations of prenominal and postnominal adjective constructions in SA within the framework of LA described above. This paper utilizes the option of (24a) of LA for prenominal adjective construction and (24b) for postnominal adjective construction. Since there is no justification for limiting shared quality only to ϕ-features, many proposals have suggested the possibility of labelling new syntactic objects through feature sharing, including *Q*-features, *Int*-features, *wh*-features, *Conj*-features, etc. (Saito 2016; Park 2019).

This paper suggests further that the [DEF] feature be inherited from the PH head D to the head of its complement AdjP, akin to the inheritance of ϕ-features in languages (Chomsky 2008, 2013, 2015).

(27)
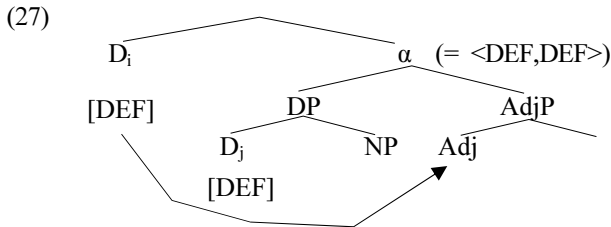
Similar to how ϕ-features are inherited from phase heads C and *v* to the heads of their respective complements T and R, as described in (25a and b), another possible PH head D_i of DP is proposed to transmit the [DEF] feature to the head Adj of its complement AdjP in (27)[5,6]. Suppose now that the AdjP is characterized as the [+DEF] feature

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5   Given that the feature inheritance in Chomsky (2008) occurs in a way that the ϕ-features of the PH head are transmitted to the head of its complement, the [DEF] feature in (27) is possibly transmitted to the head of AdjP because it is the complement of and searchable from the PH head D_i.

6   An anonymous reviewer raised a question about how feature inheritance can be extended from D to Adj in Arabic. One possible answer is that the head D_i carries the [DEF] and ϕ-features, either one or both of which are uninterpretable, and they are inherited to the head Adj. This render them valued by those of N through feature sharing, triggering comprehensive agreement in ϕ-features, Case, and definiteness. The SO α then undergoes Transfer, resulting in the postnominal adjective construction (Richards 2007 and Mizuguchi 2014). The feature inheritance in Arabic is supported by the fact that the [DET] feature on the head D is relevant exclusively to adjectives with an attributive function. As a result (i) is ruled out because of the

inherited from the head D_i, and the DP, a member of the pair-Merged SO α, has the same [+DEF] feature on its head D_j. In this case, neither the AdjP nor the DP_j needs to undergo IM. The same situation occurs when the AdjP and the DP_j have the same [-DEF] feature. The new SO α now possesses the shared feature [DEF], labeled <DEF,DEF>.[7]

Unlike the previous analyses, assuming that the adjective contains the [DEF] feature in its entirety via feature copy or spreading, this analysis proposes that the [DEF] feature originates in the head of D_i and is transmitted to the head of AdjP. This results in the duplication effect of the determiner on the sequence of [NP AdjP] in postnominal adjective DPs.[8] The derivation in (27) triggers the freezing effect on the externalization of [D_i [<DEF,DEF> DP AdjP]], where the adjective is positioned in situ behind the noun head N. This is borne out in that unlike Greek and Hebrew, the agreement in definiteness for DPs in SA occurs in the context where the adjective and the head noun share the same

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predicative function of the adjective *isaabiqun* 'former' in the postnominal position.

  (i) *al-mudiir-u   saabiqun
      the-director-nom former
      'The director is former'

Another piece of evidence is that the attributive adjective *al-tawii-u* 'the tall' is the immediate complement of D, thus preceding and being positioned higher in the structure than the predicative adjective *al-faransiyy-u* 'French' in (ii)

  (ii) al-suhufiyy-u   al-tawii-u   al-faransiyy-u
      the-journalist-nom the tall-nom al-French-nom
      'the tall journalist who is of French origin'   (Fehri 1999: (11))

7 Fakih (2017) also proposed a feature sharing approach to the agreement in definiteness with the following structure of SA.

  (i)
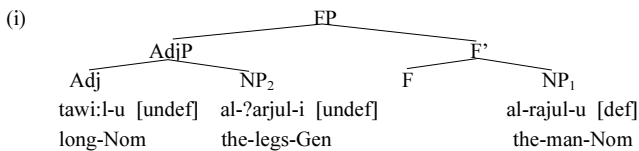
But his analysis, following Pesetsky and Torrego (2007), assumes that the uninterpretable [*u*DEF] feature of the adjective proves the same uninterpretable [*u*DEF] feature of NP2, resulting in two instances of a single shared feature. Once the adjective gets the value from NP1 under c-command, its value is shared with NP2.

8 One reviewer pointed out some implications on optional operations in that the structure of [D_i [DP AP]] can be realized as either the attributive *al-kitaab al-dʒdeed* or the predicative *dʒdeed al-kutib* function and the distinction is determined by the feature on the head D.

feature of definiteness, either [+DEF] or [-DEF] feature.

(28) al-rajul   al-saʕid
     def-man   def-happy
     'the happy man'

(29) fataat-u-n   saʕidat-u-n
     girl-nom-ind happy-nom-ind
     'a happy girl'

As shown in (28) and (29), the postnominal adjective *saʕid* 'happy' invariably carries the exact value of [DEF] as the preceding head nouns *rajul* 'man' and *fataatu* 'girl.' This provides clear evidence that the shared [DEF] feature plays a crucial role in externalizing the syntactic outcome of the sequence of the NP and its subsequent modifier AdjP in the DP constructions of SA.

The postnominal adjective agrees not only in definiteness but also in Case with its preceding NP. The Case agreement between the NP and the adjective in the postnominal position can now be accounted for by assuming that both the NP and the adjective contain the shared [DEF] feature, a Case-bearing category inherited from the D_i. This makes them subject to the same Case realization under agreement. Consequently, the SO α in (27) receives a Case from outside, exhibiting the effect of Case spreading on both the pair-Merged members, duplicating the same Case and definiteness for the NP and its subsequent modifier AdjP.[9]

(30) walad-u-n   muʔaddab-u-n
     boy-nom-ind polite-nom-ind
     'a polite boy'

(31) al-rajul-a   al-saʕid-a
     def-man-acc def-happy-acc
     'the happy man'

(32) bi   al-kurat-i   al-kabiirat-i
     with def-ball-gen def-big-gen
     'with the big ball'

---

9   The Case realization can be considered a slightly different version of Case stacking discussed in Richards (2012) and Pesetsky (2013).

In (30), both the NP *walad* 'boy' and its modifier adjective *muʔaddab* 'polite' share the same Case (*-u* 'nom') and definiteness (*-n* 'ind'). In (31) and (32), the NP *rajul* 'man' and *kurat* 'ball' exhibit the same Case (*-a* 'acc' and *-i* 'gen') and definiteness (*al-* 'def') as those of the postnominal adjective *saʕid* 'happy' and *kabiirat* 'big,' respectively.

The derivation in (27) aptly accounts for the full agreement in ϕ-features, Case, and definiteness between the NP and its postnominal adjective in the DP construction of SA.

(33) al-kitab-u   al-ʕaħmar-u
      def-book.sg.masc-nom   def-red.sg.masc-nom
      'the red book'

(34) rajul-u-n   qaSi:r-u-n
      man.sg.masc-nom-ind   short.sg.masc-nom-ind
      'a short man'

The NPs *kitab* 'book' and *rajul* 'man' in (33) and (34) bear the same ϕ-features, Case, and definiteness as their modifier adjectives *ʕaħmar* 'red' and *qaSi:r* 'short.' This does not necessarily mean that the ϕ-features are subject to the feature sharing algorithm of SA in Chomsky (2013, 2015). Stockwell (2014), Narita and Fukui (2022) and Shim (2018) have pointed out that if an SO is labeled at the CI interface, this label is expected to contribute to interpretation. Shim (2018) has further posited that the label should be conventional category-based labels, such as V and N, to distinguish, for example, the verbal SO from the nominal SO. The label <φ,φ> is not a categorial label and should be eliminated if possible.

The SO α created by the pair Merge of DP and AdjP in (27) is labeled by <DEF,DEF>, which can contribute to interpretations of the semantics of definiteness. Definiteness is a prominent feature of nominal expressions associated with familiarity, specificity, inclusiveness, and identifiability (Lyons 1999). It designates a particular item in the discourse (Heim 1982). Given that the agreement in definiteness relies on mutual dependence with ϕ-features, we can assume that the DP and its following AdjP undergo the pair Merge with the label <DEF,DEF> only when they carry the same ϕ-features. Although the ϕ-features do not directly participate in the creation of a new SO labelled by itself in SA, they provide the SO with a situation where it is labeled with the shared feature <DEF,DEF> via pair Merge in LA.

5.2 Prenominal adjectives DPs

The prenominal adjective DPs belong to one of two types of so-called Construct State CS in Arabic. It is expressed either by the adjective followed by the DP, as shown in (35) and (36), which are classified as adjectival CS, or by the noun followed by the DP, as in (37) and (38), which are classified as nominal CS in the grammar of Arabic. The DPs in CS are always definite, marked with the definite article prefix *al-* and Case-marked with the genitive Case *–i*.

> (35) jameel-u   al-wajh-i
>   pretty-nom   def-face-gen
>   'the pretty (part of the) face'
> (36) akbar-u   al-awlaad-i
>   oldest-nom   def-boys-gen
>   'the oldest (one of the) boys'
> (37) manzal-u   al-rajul-i
>   house-nom   def-man-gen
>   'the man's house'
> (38) qalam-u   al-walad-i
>   pen-nom def-boy-gen
>   'the boy's pen'

The adjectives *jameel* 'pretty' in (35) and *akbar* 'oldest' in (36) are positioned before the nouns *wajh* 'face' and *awlaad* 'boys.' Unlike in the cases of postnominal adjectives, they do not agree in any of the φ-features, Case, or definiteness. The adjectives are Case marked according to their location in the sentence. In (35)-(38), the adjectives and nouns of the CS constructions are assigned the nominative Case *-u* 'nom,' while in (39) and (40), they can have the accusative Case *-a* 'acc' as in *huwlandiy-a* 'Dutch' and *gadid-a* 'new.'

> (39) kaana   huwlandiy-a al-aʔasl-i
>   was.he dutch-acc   def-origin-gen
>   "He was of Dutch origin."

(40) qarat-u   gadid-a   al-kutub-i
       read.I-nom   new.sg.masc-acc   def-book.pl.fem-gen
       "I read the new (one in the) books."

Unlike in other languages, the adjectival CS in SA does not take the definite article before the prenominal adjective, as seen in (41).

(41) (*al)-dʒadeed al-kitaab
       def-new   def-book
       '(intended reading) the new one in the books'

The prenominal adjective DPs do not exhibit multiple occurrences of the definite article [+DEF] *al-* or indefinite article [-DEF] *-n*, nor do the adjectives show an instance of agreement in φ-features and Case. This indicates that the prenominal adjective *dʒadeed* 'new' in (41) does not carry any information about definiteness and is free from realizing the [DEF] feature in the DP. This is supported by the fact that the AdjP does not possess the [DEF] feature in its entirety. The ungrammaticality of (41) is simply due to a wrong application of the IM in LA. This is because if both the adjective and the head noun share the same feature of definiteness [+DEF], they are subject to the freezing effect with the label of the shared feature. This leads to the incorrect displacement of the attributive function of the adjective *al dʒadeed* 'the new' before the head noun in the construction of DPs, which is not tolerable within the framework of LA in the MP.

Prenominal adjectives are less frequently found than postnominal adjectives in DPs and have, therefore, not been extensively discussed in the study of nominal expressions in SA. Research on the duplication of determiners in Scandinavian and Greek is based on the following examples: the double determiners are not suitable for non-intersective adjectives.

(42) i   ipotithemenit (*i) romokrates
       def alleged   def terrorist
       'the alleged killer'   (Kolliakou 2004: (3))

The second determiner *i* 'the' in (42) is not allowed simply because this nominal expression contains the non-intersective adjective *ipotithemenit* 'alleged' in Greek.[10]

Based on observations in Scandinavian and Greek, Alexiadou and Wilder (1998), Cinque (2010), and Alexiadou (2014) analyzed the duplication of determiners in Greek within the framework of DP small clause.

> (43) to vivlio to kokino
> def book def new
> 'the new book'

Assuming that the duplication of determiners in the nominal expressions is a residue of a reduced relative clause, the head D takes the CP complement where the head noun *to vivlio* 'the book' and the adjective *kokino* 'new' are in a subject-predicate relation. The head D *to* 'the' in (43) now takes the DP *to vivlio* 'the book' as the subject in its specifier position (the strict line) and the adjective *kokino* 'new' as its complement in the specifier of CP (the dotted line), as illustrated below in (44).[11]

(44)
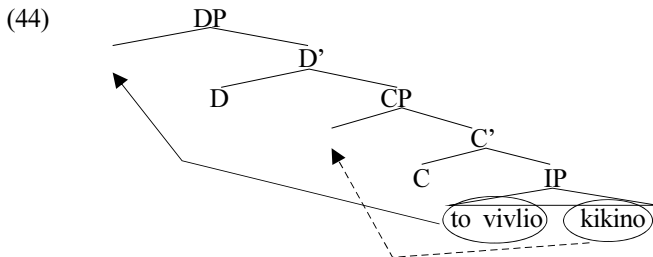
This analysis essentially follows Den Dikken (2006), who posited that predication internal to the DP arises from an independent functional category, Relator Phrase RP, where the DP contains a small clause RP holding two nominals in a predication relation, in terms of the mediation of a functional head, Relator.

> (45) a. that idiot of a doctor

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10 The non-intersective adjectives are those that do not obey the rule of interpretation formulated in ((Adj N)) = ((Adj)) ∩ ((N)), so that the individual cannot be a member of both the denotation set of the head noun and the denotation set of the adjective. See Partee (1995) and Bouchard (2002) for more.

11 The analysis of the DP small clause originates from Kayne (1994), who proposed the DP structure containing a CP for relatives and possessives.

b.

(Den Dikken 2006: (2))
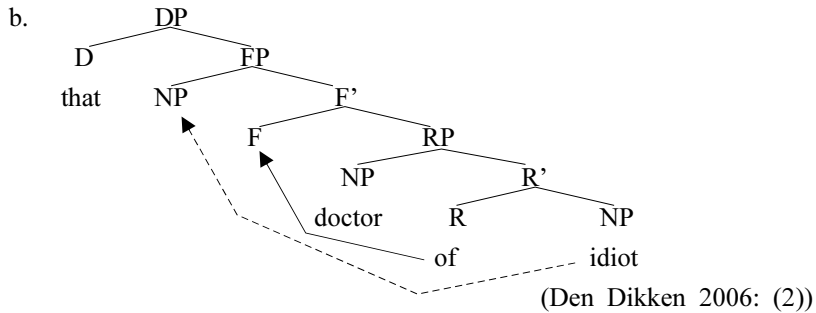
Given the structure of (45b), the surface order of (45a), where the predicate *idiot* precedes the subject *doctor,* is derived by moving it to the specifier of a linker phrase labeled FP, as indicated by the strict line.

As AlQahtanj (2021) pointed out, however, this derivation is possible only when the head R *of* undergoes head movement to join to the next higher head F, which ultimately renders both the NPs, the subject NP *doctor* and the predicate NP *idiot*, equidistant to the target, the specifier of FP. This adheres to the locality condition based on an early version of the MP in Chomsky (1995). The structure of (44) and (45) in Greek are not relevant to the DP analysis regarding SA. The DP *to vivlio* 'the book' in (44) must escape from the IP without apparent reason, potentially violating the locality condition. *To* 'the' in the head D is also counted differently from *to* 'the' in the DP *to vivlio* 'the book,' indicating that it should function as a copula, necessitating further justification for the properties of the head D in Greek.

The interpretation of double/single determiner(s) in Greek nominal expressions has been a subject of controversy. Some researchers argue that double occurrences of the article do not produce a multiple index interpretation, so both (46a) and (46b) in Greek refer to one book (Giusti 2002).

(46) a. to vivlio to   kokino
          def book   def new
     b. to   kokino to   vivlio
          def new   def book
          'the new book'

Others reported that they do not have the same interpretation; they imply a contrast or

restrictive readings, in which the head noun yields a presupposition, while the adjective conveys a focus reading with an article (Kolliakou 2004; Compos and Stavrou 2004).

(47) a.   o   diefthindis ipe oti i   kali   erevnites   tha apolithun
          the director   said that the efficient researchers will be fired
     b.   o   diefthindis ipe oti i   kali   i   erevnites   tha apolithun
          the director   said that the efficient the researchers will be fired
          'The director said the efficient researchers will be fired.'

(Kolliakou 2004: (9))

(47a), which contains only one definite article in the beginning and lacks a pre-established set by the head noun, is ambiguous. The DP *i kali erevnites* 'the efficient researchers' can be interpreted as either 'only the efficient researchers' or 'those as part of the larger group.' In contrast, (47b), which has double occurrences of the article and the definite article on the adjective, defines the set of researchers that are efficient and has only the first reading of (47a).

For the interpretation of the multiple occurrences of articles in the nominal expression of SA, Fehri (1999) claimed that two types of adjective constructions are semantically interchangeable. However, AlQahtani (2021) provided evidence that the prenominal adjective *kabeer-a* 'master-acc' in (48a) cannot be transformed into the postnominal adjective in (48b).

(48) a.   aabalt-u kabeer-a   al-ʕaʃirat-i
          met-I   master-acc def-tribe-gen
     b.   *qaabalt-u al-ʕaʃirat-i   al-kabeer-a
          met-I   def-tribe-acc def-master-acc   (AlQahtani 2021: (35))

The intended reading of (48) is either 'I met the person who is the master of his tribe' or 'I met the master in the tribe.' However, the postnominal adjective in (48b) cannot convey this interpretation.

This paper differentiates postnominal adjectives from prenominal adjectives in both syntactic and semantic aspects. Most native speakers of SA do not consider the AdjP NP sequence of SA in (49) as a case where the adjective *dʒadeed-a* 'new-acc' modifies the following noun *al-kutib-i* 'the books-gen.'

(49) dʒadeed-a al-kutib –i
     new-acc   def-books-gen
     'the new (one in the) books'

The prenominal adjectives *ʕazım-u* 'great-nom' in (50) and *huwlandiy-a* 'Dutch-acc' in (51) establish not only a semantic relation of a property, part, or quality of their following nouns *al-ħāz̄-i* 'the fortune-gen) and *al-aʔasl-i* 'the origin-gen,' but also a syntactic specification of Case, depending on their distribution in the sentence.

(50) anta ʕazım-u   al-ħāz̄ –i
     you great-nom def-fortune-gen
     'You are very lucky.'

(51) kaana huwlandiy-a al-aʔasl-i
     was   Dutch-acc   def-origin-gen
     'He was of Dutch origin.'

The postnominal adjective in the nominal expressions of SA functions attributively to its preceding head noun, while the prenominal adjective serves a predicative function at the predicative position. This paper analyzes the prenominal adjective in the DP in a way that it originates inside the DP but undergoes displacement by IM and obtains a Case from outside the DP.

For the absence of agreement in definiteness and the reversed order of NP and AdjP, this paper proposes the following derivation of (52), where the DP and AdjP are pair Merged but the AdjP undergoes IM to satisfy the LA in (24a).

(52)

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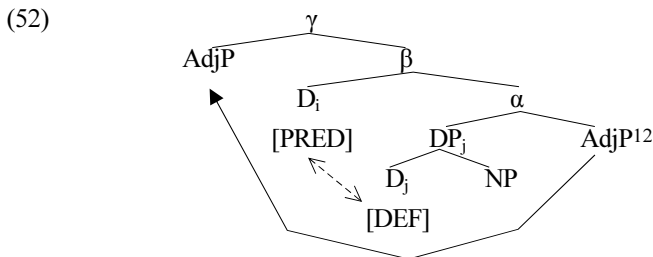
12 The feature [PRED] can be transferred to the head of its complement AdjP, as in the postnominal adjective constructions, but it does not contribute to the new SO α.

Differently from the postnominal adjective construction, the D_i in the prenominal adjective construction has the feature of [PRED].[13] The structure in (52) remains irrelevant to the option of feature sharing of the LA in (24b) since the DP_j and the AdjP do not align with any prominent feature. For the label of the SO α on interfaces, the AdjP, which is one of the pair Merged SOs, is subject to (24a) of LA. The AdjP now undergoes IM, merging with β, and creates a new SO γ. The head of the remaining DP_j is now the only head searchable and becomes the label of α (Benmamoun 2000; Piatteli et al. 2005).[14]

(53) qarat-u   gadid-a   al-kutub-i
      read.I-nom new.sg.mas-acc def-book.pl.fem-gen
      'I read the new (one of the) books.'

(54) qidr-u-n   mutawassit-u al-hagm-i
      pot-nom-ind medium-nom def-size-gen
      'a medium-sized pot'

Given that the DP_j in (52) always carries the definite [+DEF] feature on its head, the head D_i is understood to select the definite [+DEF] feature as its complement when it is specified with the feature [PRED]. This is borne out in that the DPs, *kutib-i* 'books-gen' and *hagm-I* 'size-gen,' in (53) and (54) are prefixed by the definite article *al* 'the.' The absence of agreement in φ-features between the prenominal adjective and its following head noun can also be accounted for by the label of the SO α. This further explains that the prenominal adjective is not bound to any definiteness; the adjective does not contain the feature of D, nor does the feature transmission assign it a value.

(55) qarat-u   gadid-a   al-kutub-i
      read.I-nom new.sg.mas-acc def-books-gen

The analysis of the prenominal adjective construction in (52) works as follows; the

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13 The nature of the head D of DP has been much discussed in semantic as well as syntactic aspects (Diesing 1988, Dubinsky and Davis 1999, and den Dikken 2006). See Androutsopoulou (1995) for the head D and DP configuration in predication.

14 The possibility that the DP in (52) undergoes IM is excluded due simply to the no vacuous movement constraint. Its displacement does not trigger any significant effects on sound and meaning.

expression of (55) starts with the pair merged SO α, [DP$_j$ AdjP], as illustrated in (56). Since a new SO created by External Merge EM must maintain a certain label in the shape of the hierarchical structure and exhibit the linearization effects, the LA of MP in (23) or (24a, b) applies. Given the feature [PRED] on the head D$_i$, no significant feature is shared by both the DP$_j$ and the AdjP. The LA of (24a) now applies to implement IM of one of the members, which should be AdjP in the sense of economy, leaving the DP$_j$ behind.

(56)
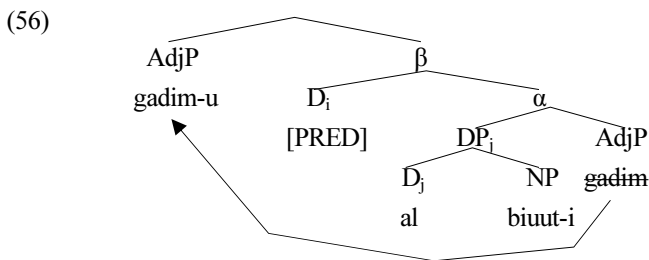
The AdjP is displaced to merge with β, which incurs the reversed order, yielding the prenominal adjective construction. The SO α is now labeled by the head of the remaining member, which is DP$_j$, because the D$_j$ is the only detectable head in the minimal search domain. (56) is thus the outcome of externalization determined by the compliance of the LA at the interfaces. (56) is, as seen in (50) and (51), to play a predicative function due to the feature of [PRED] on the head D$_i$, exhibiting an interpretation of 'I read the new (one of the) books.'[15]

6. Conclusion

The study of nominal expressions in languages has investigated the presence or absence of multiple occurrences of the same article within the DP. Greek, Hebrew, and Swedish, among others, exemplify the distribution of the definite article to both the head noun and

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15 An anonymous reviewer suggested an interesting observation in Korean, where [Yeonghui dahri] 'Yeonghui leg' can be realized in two different constructions: the multiple object Case '-lul' marked construction as in *Horangi-ka [Yeonghui-lul dahri-lul] mwulessta* 'The tiger bit Yeonghui's leg' through Case feature sharing, or the passive construction as in *Yeonghui-ka horangi-hantae [-- dahri-lul] mwulyessta* 'Yeonghui was bit by a tiger on the leg' via Internal Merge.

its modifying adjective. They have been analyzed regarding split DPs, reduced relative clauses, and appositive DPs. However, the agreement in definiteness in SA exhibits distinctive characteristics from Greek and Scandinavian languages in that the members within the DP agree not only in the feature [+DEF] but also in [-DEF], the agreement in definiteness is accompanied by that of φ-features and Case, and the comprehensive agreement is lost when the adjective precedes the head noun in the DP.

Analyses of nominal expressions in SA have pursued parametric alternative internal structures of DP, positing two independent basic structures and employing the notion of Agree or Feature Checking/Copying to elucidate the agreement between the head N and the adjective as well as their relative placement within the DP. However, the operation of Agree in the MP cannot account for the two different positions of the adjective in relation to the head noun in the DP because it does not necessarily trigger the displacement of syntactic objects in the derivation. Furthermore, these analyses have inevitably suggested two distinct basic structures for DPs in SA, resulting in a situation that ultimately proves uneconomical within the computational system of the minimalist framework. Additionally, they treat definiteness on par with Case and φ-features without justification, and they do not even capture the correlation between the semantic patterns of the dual determiners and their relevant syntactic derivations within the DP.

Like in Greek and other Scandinavian languages, the interpretation of the dual determiners in SA does not significantly differ from that of the single determiner in nominal expressions. This indicates that the adjective in SA does not carry its own semantic index but rather shares the same features of definiteness with the head noun through feature sharing, spreading, duplication, or inheritance, all of which are morphologically realized at the PF interface. This paper contends that both positions of the adjective in the DP can be derived from a unified syntactic structure, proposing that the agreement in definiteness of the DP can be better accounted for within the framework of the pair Merge in the MP.

In this paper, we addressed the occurrences of the same article in the DP of SA by employing the unified underlying structure of $[D_i [_\alpha DP AdjP]]$, where the D_i can have the feature of either definiteness [DEF] for the postnominal adjective or predication [PRED] for the prenominal adjective constructions. The distinction in meaning between the two positions of the adjective is contingent on the parametric variations of the head D_i, whether [DEF] or [PRED], in the concept of minimalism within the narrow syntax. The two possible derivations from $[D_i [_\alpha DP AdjP]]$ is borne out in that the adjective

can serve as either the attributive or the predicative function, and the distinction is determined by the feature on the head D and its structure. The agreement in definiteness was argued to result ultimately from the compliance of LA in the MP for interpretation at the interfaces.

The parameters are limitedly applied to morphological characteristics in the MP, resulting in the linearization of SOs. LA can eventually play a role in determining the outcome of externalization; it can not only solve the problems of labeling on SOs, but also provide a solution to the externalization of the sentence in terms of IM of one of the two phrases, XP and YP, or the feature sharing, yielding a freezing effect on them. This paper asserts that the relative placement of the adjective to the head N and their comprehensive agreement are determined by the morphological feature on the phase head D_i, which eventually triggers either IM or feature sharing in LA for the $[_\alpha$ DP AdjP]] to be interpretable at the interfaces. Thus far, this paper has described two patterns of Arabic DPs regarding agreement in ϕ-features, Case, and definiteness, scrutinized previous analyses in languages, and proposed an alternative approach that not only accommodates the syntactic derivations of the two types of DPs for the dual realization of determiners in SA, but also addresses their relevance to semantic interpretations in a unified and systematic manner.

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Dhari AlOtaibi
Assistant Professor
Department of English
Gulf University for Science and Technology
Block 5, Building 1
Mubarak Al-Abdullah Area/West Mishref, Kuwait
E-mail: alotaibi.d@gust.edu.kw

Shamlan AlQenaie
Associate Professor
Department of English Language and Literature
Kuwait University
Abdullah Al Muburak Al Sabah
Shidadiya-South Campus, Kuwait
E-mail: shamlan.alqenae@ku.edu.kw

Soonhyuck Park
Professor
Department of English
Gulf University for Science and Technology
Block 5, Building 1
Mubarak Al-Abdullah Area/West Mishref, Kuwait
E-mail: park.s@gust.edu.kw