

Adjectival agreement in the Arabic noun phrase

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This paper discusses the properties of adjectival agreement in noun phrases in Standard Arabic. Arabic has a particular construction, in which an adjective has a subject internal to the adjective phrase. The agreement phenomena in this construction shows that we must distinguish two separate agreement operations in the constructions under consideration, rather than just one. In this way, we obtain an analysis for adjective agreement that accounts for the presence of the definite determiner on Arabic modifying adjectives. Furthermore, it turns out that modifying adjectives have a structure that is very similar to that of relative clauses.

1. Introduction

The structure of adjective phrases is a topic that receives relatively little attention in the linguistic literature. There are some assumptions, e.g. by Abney (1987) and Zwarts (1992) that the adjective phrase is headed by a DegP, and there are some proposals that adjective phrases should be analysed in a way similar to relative clauses (Kayne, 1994).

In this paper, I look at the structure of the adjective phrase in Arabic. Discussing the definiteness agreement construction and the mixed agreement construction, I argue for a more elaborate structure of the Arabic adjective phrase. More specifically, I claim that traditional accounts of adjective agreement, supported recently in Carstens (2000), cannot be maintained in light of the mixed agreement facts.

This paper is organized as follows: in the remainder of this introduction, I present the agreement phenomena in the Arabic adjective phrase. In section 2, I discuss the mixed agreement facts. I argue that the adjective phrase has a clause-like structure and that adjective agreement is a case of the standard Agree operation (Chomsky, 1995).

Then in section 3 I look at definiteness agreement, arguing that it establishes a relation between the noun and the adjective that modifies it. In section 4, I take a quick look at relative clauses, which as it turns out can be analysed in much the same way as adjective phrases.

First, let me demonstrate agreement in the Arabic adjective phrase. Adjectival agreement in Arabic shows the pattern familiar from Romance languages: there is agreement in gender (1a,b) and number (1c,d):

- (1) a. rağul-un ɽawīl-un
man-NOM tall.M-NOM

- ‘a tall man’
- b. imra’at-un ṭawīl-at-un
woman-NOM tall-F-NOM
‘a tall woman’
- c. riġāl-un ṭiwāl-un
men-NOM tall.M.PL-NOM
‘tall men’
- d. nisā’-un ṭawīl-āt-un
women-NOM tall-F.PL-NOM
‘tall women’

Adjectives also agree with the noun in case:¹

- (2) a. ra’aytu imra’at-an ṭawīl-at-an
I.saw woman-ACC tall-F-ACC
‘I saw a tall woman’
- b. naġlisu ḥawla -l-ṭāwīlat-i -l-mustadīrat-i
we.sit around the-table-GEN the-round-GEN
‘we are sitting around the round table’ (SASG p. 153)²

There is, however, another phenomenon, which distinguishes the Arabic concord pattern from that of Romance languages: there is also agreement in definiteness. The adjective takes the same definiteness marker as the noun it modifies:

- (3) a. raġul-u-n ṭawīl-u-n
man-NOM-INDEF tall-NOM-INDEF
‘a tall man’
- b. al-raġul-u al-ṭawīl-u
the-man-NOM the-tall-NOM
‘the tall man’
- c. fī ‘amrīkā -l-lāṭīniyyat-i
in America.GEN the-Latin-GEN
‘in Latin America’ (SASG p. 153)
- d. ‘aġlisu ‘alā maq‘ad-i-n fāḥir-i-n
I.sit on chair-GEN-INDEF luxurious-GEN-INDEF
ḡildiyy-i-n
leather-GEN-INDEF
‘I’m sitting in a luxurious leather chair’ (SASG p. 153)

(3a) and (3b) show the contrast between an indefinite and a definite noun: an adjective has the same definiteness marker as the noun, either *-n* or *al-*. (3c) shows that this is not merely a copying of the determiner: the proper noun *‘amrīkā* does not have a determiner but is inherently definite. The adjective accompanying the noun takes the determiner in agreement with this. (3d) is pro-

¹The definite determiner in Arabic is *al-*. The *a-* is dropped when the preceding word ends in a vowel.

²Most of the examples were taken from the descriptive grammar of Modern Standard Arabic by El-Ayoubi, Fischer and Langer (2001), which I abbreviate as *SASG*.

vided as an extra example, and can be contrasted with (2b).³

2. Establishing agreement

The common assumption is that adjectival agreement inside the DP consists of a direct agreement relation between the head noun and its modifiers. This position is taken by Carstens (2000), for example. However, data from Arabic suggests that more is involved than the establishment of a direct agreement relation. Consider the following phrase:

- (4) li -l-ğazā'ir-i -l-mutaqaddim-i đikr-u-hā
to the-islands.F-GEN the-preceding.M-GEN mentioning.M-NOM-their
'to the aforementioned islands'

The construction in (4) has no equivalent in English. The head of the phrase is the noun *al-ğazā'ir* 'the islands'. It takes genitive case because of the preposition *li*. The noun is modified by an adjectival participle, *al-mutaqaddim* 'preceding'. However, although it is modified by the participle *al-mutaqaddim*, the noun *ğazā'ir* 'islands' is *not* the subject of the participle. The subject of the participle

³This phenomenon of definiteness agreement seems very similar to the phenomenon of Determiner Spreading found in Greek, (see, for example, Androutsopoulou, 1995 and Alexiadou and Wilder, 1998), but there are some differences. DS in Greek is not obligatory. Adjectives that allow it, do not have to undergo it. In Arabic, however, definiteness agreement is obligatory:

- (i) a. *al-rağul-u taḡwī l-un
the-man-NOM tall-NOM.INDEF
'the tall man'
b. *al-ṭāwilat-u mustadī rat-un
the-table-NOM round-NOM
'the round table'

The examples in (i) cannot have the indicated meanings. (They are in fact grammatical with a sentential reading: *the man is tall* and *the table is round*.)

Another difference is that in Greek, DS is only allowed with so-called predicative adjectives:

- (ii) a. o ipotithemenos (*o) dolofonos
the alleged (*the) murderer
b. *o dolofonos itan ipotithemenos
the murderer was alleged
(Alexiadou and Wilder, 1998)

This is notably different in Arabic. All adjectives are required to agree in definiteness with the noun they modify, no matter whether they are predicative or not:

- (iii) a. al-qātil-u *(al)-maz^cūm-u
the-murderer the-alleged
'the alleged murderer'
b. *al-qātil-u maz^cūm-un
the-murderer alleged-INDEF
'the murderer is alleged'

As shown in (iiib), the adjective *maz^cūm* cannot be used as a sentence-level predicate, which indicates it is not a predicative adjective. However, as (iiia) shows, the determiner is still required when the adjective is used attributively.

is *dīkr-u-hā* ‘their mentioning’. This is a gerund-like deverbal noun, modified by a pronominal suffix *-hā*. This resumptive pronoun expresses the object of the action expressed by the deverbal noun, and it refers back to ‘islands’. Note that the noun *dīkr-u-hā* has nominative case.

The combination *mutaqaddim dīkr-u-hā* means ‘their mentioning preceding’. When it is used attributively with the noun *ġazā’ir*, the whole has the meaning *the islands whose mentioning preceded*, which is best translated in English as indicated.

The agreement facts in (4) are particularly interesting. The head noun *al-ġazā’ir* is feminine plural, definite and has genitive case. The subject of the participle, *dīkr-u-hā*, is masculine singular, definite and has nominative case. Somewhat surprisingly, the participle *al-mutaqaddim* shows a mixed set of features. It is masculine singular, definite and has genitive case. That is, its φ -features are assigned by its subject, *dīkr-u-hā*, whereas its case and definiteness features are assigned by the noun it modifies, here *ġazā’ir*.

The following examples show the versatility of this construction:

- (5) a. ra’aytu -mra’a-t-an ġamīl-an
I.saw woman-F-ACC.INDEF beautiful.M-ACC.INDEF
waġh-u-hā
face.M-NOM-her
litt. ‘I saw a woman beautiful her face’
‘I saw a woman with a beautiful face’
- b. ġā’at min balad-in ma^crūfa-t-in
it.came from country.M-GEN.INDEF famous-F-GEN.INDEF
šidda-t-u ḥarārat-i-hi
strength-F-GEN heat-GEN-its
litt. ‘it came from a country famous the strength of its heat’
‘it (the heat) came from a country famous for (the strength of) its heat’ (SASG p. 187)
- c. ’ilā silsilatin ġadīdatin min al-ḥurūb-i; -l-ša^cb-i
to chain new of the-wars.F-GEN the-difficult.M-GEN
-l-taḥakkum-u bi natā’iġ-i-hā;
the-containing-NOM with results-GEN-their
litt. ‘to a new chain of wars their effects difficult to contain’
‘(this tension could lead) to a new chain of wars whose effects will be difficult to contain’ (SASG p. 187)

The examples show that the construction is not limited to participles, but also occurs with adjectives. They also further illustrate the two agreement processes. In (5a), the modified noun, *imra’a* ‘woman’, is feminine, indefinite, and takes accusative case. The modifying adjective, *ġamīl* ‘beautiful’, is masculine, agreeing with *waġh* ‘face’, but the adjective is at the same time indefinite, agreeing with *imra’a* rather than with *waġh-u-hā*, which is definite. Note that the adjective also has accusative case, like the head noun.

Both (5b) and (5c) show a difference in gender between the head noun and the modifying adjective. In (5b), the head noun is *balad* ‘country’, which is masculine, whereas the modifying adjective is *ma^crūfa* ‘famous’, which is in the feminine form. The subject of this adjective, *šiddat* ‘heat’, is feminine as well. This example clearly shows that the modifying adjective agrees in gender with its DegP-internal subject, not with the head noun. (5c) is similar: the head noun *ḥurūb* ‘wars’ is a feminine plural. The modifying adjective *ša^cb* ‘difficult’, however, is masculine singular.⁴ The subject of the adjective, *taḥakkum* ‘containing’, is a masculine noun. This shows that the adjective agrees in number with its own subject *taḥakkum*, not with the head noun *ḥurūb*.

Furthermore, the last example, (5c) shows that the resumptive pronoun does not have to occur on the subject of the adjective. Here, the subject is a nominal infinitive, *al-taḥakkum* ‘the containing’, and the resumptive pronoun occurs on the object of that infinitive *nata³iḡ-i-hā* ‘their results’.

All these examples clearly demonstrate is that there is not one but there are two agreement processes involved in the adjectival agreement in (4) and (5). Agreement in φ -features is distinguished from agreement in case and definiteness. In other words, the way in which adjectival agreement is established is more complex than usually assumed.

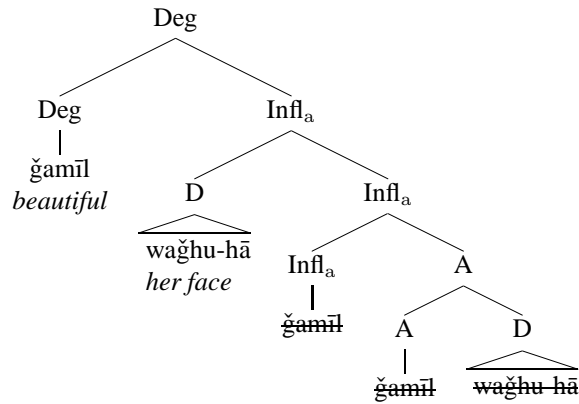
Let us look at this structure to see how we can analyse it; for the moment, I only look at the adjectival phrase. Consider the example in (5a). The adjective phrase contains two elements: the A head *ḡamīl* and the subject *waḡhu-hā*. I will follow proposals by Abney (1987) and Zwarts (1992) that the adjective phrase is a DegP.

The evidence shows that there is an agree relation between the adjective and its subject. Let us say that the subject is generated as a sister of the adjective and moves to the specifier position of an agreement position, which I will call Infl_a . The adjective is assigned its φ -features in the agreement process with Infl_a , and this process is also responsible for movement of the subject to spec,Infl_a .⁵

⁴In fact, the noun *ḥurūb* ‘wars’ is an inanimate plural, which means it will trigger feminine singular agreement: all nouns that are inanimate plurals trigger feminine singular agreement on verbs, demonstratives, adjectives, pronouns, etc.

⁵In Kremers (2003) I show that the subject of the adjective must be generated in a higher position, outside the AP. It would take too far to go into the details of that analysis here, however. Similarly, I show that the adjective itself moves to Deg.

(6)

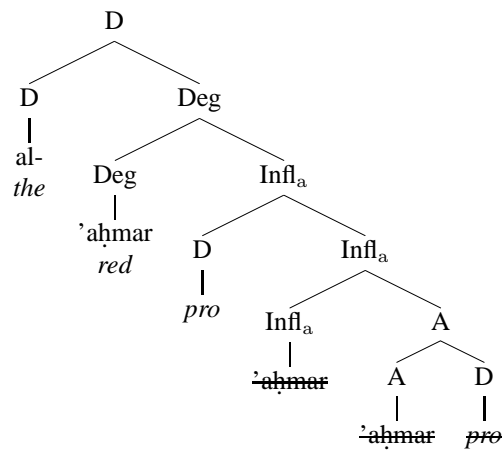


In the examples so far the DP-internal adjective has an overt subject. Most DP-internal adjectives in Arabic do not, however. Usually, they just modify the noun, as in (7):

- (7) a. al-baytu -l-'aḥmaru
 the-house the-red
 'the red house'
- b. 'abniyat-u landan al-qadīmat-u
 buildings-NOM London the-old-NOM
 'the old buildings of London' (SASG p. 187)

We have two options open to us. We can either say that the structure of the examples in the previous section is exceptional, and assume that examples such as (7) have a much simpler structure. The alternative is to say that (7) has a structure very similar to that of the earlier examples. Because a unified analysis of adjectives is preferable, I will assume that the latter is in fact the case. This means we must posit the presence of an empty element in the DegP-internal subject position:

(8)



Here the argument of the adjective is syntactically realized as a *pro* element. The structure is essentially the same as the one for (4): the adjective has its own subject with which it agrees. The only difference is that this subject is now a covert element: *pro*.

As I indicated above, the examples of (4) and (5) all contain a resumptive pronoun that refers back to the head noun of the DP. We now see that adjective phrases that do not have an overt DegP-internal subject also have a resumptive pronoun, which is *pro*.

3. Definiteness agreement

In the introduction, I showed that Arabic adjectives exhibit a phenomenon that can be termed *definiteness agreement*. In this section, I will show how we can account for it and why it takes place. To begin, let me repeat the relevant example in (9):

- (9) a. rağul-u-n ʔawīl-u-n
 man-NOM-INDEF tall-NOM-INDEF
 ‘a tall man’
 b. al-rağul-u al-ʔawīl-u
 the-man-NOM the-tall-NOM
 ‘the tall man’

As can be seen, the definiteness feature of the adjective manifests itself in the same way as it does on the noun phrase: indefiniteness is marked with a suffix *-n*, whereas definiteness is marked with the determiner *al-*.

In Kremers (2003) I analyze the determiner *al-* and the indefiniteness marker *-n* on the noun as projections of the head D. Apparently, this D head is present in the adjective phrase as well. This conclusion seems problematic because Zwarts (1992) argues that the Deg head is the adjectival equivalent of D and C, which would mean that there can be no extra D head in the adjective phrase.

However, there is good reason to assume that there is indeed a D head dominating the Deg head in the adjective phrase.⁶ Not only is the D head visibly present in the adjective phrase, it also has a function. In section 2 I reached the conclusion that every adjective phrase contains a DegP internal subject argument and a resumptive pronoun that refers back to the modified noun. DP-internal adjectives usually have *pro* as subject, which functions as the resumptive pronoun:

- (10) al-baytu [DegP -l-’abyađu *pro*]
 the-house the-white
 ‘the white house’

Following Higginbotham (1985), who argues that all adjectival modification is in fact predication, we can give the following semantic representation of the

⁶Furthermore, Szabolcsi (1994) argues that the D and the C head should each be separated into two heads. The occurrence of both a D and a Deg head in the Arabic adjective phrase may be explained in terms of this proposal.

adjective phrase:

$$(11) \quad \iota x(\mathbf{house}(x) \wedge \mathbf{white}(x))$$

What (11) tells us is that the resumptive pronoun is in fact a variable. The variable x , which is bound by the outer ι -operator, also occurs in the adjective phrase. We can plausibly say that the *pro* element in the syntactic structure is the equivalent of this variable. And it is this variable that requires the presence of the adjectival determiner.

Under common assumptions, the (nominal) determiner functions as the binder of the open argument position in the noun phrase. This argument position is the *R* role of the noun, which is generally not syntactically realized. As such, the determiner is the syntactic equivalent of the semantic ι operator.

When we look at the structure of the adjective phrase, we see that the adjectival determiner is also a binder. The variable it binds is the resumptive pronoun present in the adjective phrase. The adjectival determiner functions as a binder for the resumptive pronoun, making sure that the adjective phrase can be used as a DP-internal modifier.

With adjectives that have an overt DegP-internal subject, the analysis is the same:

- (12) a. ra'aytu -mra'a-t-an ğamīl-an
 I.saw woman-F-ACC.INDEF beautiful.M-ACC.INDEF
 waġh-u-hā
 face.M-NOM-her
 litt. 'I saw a woman beautiful her face'
 'I saw a woman with a beautiful face'
- b. $\iota x(\mathbf{woman}(x) \wedge \iota y(\mathbf{face}(y) \wedge \mathbf{of}(x)(y) \wedge \mathbf{beautiful}(y)))$

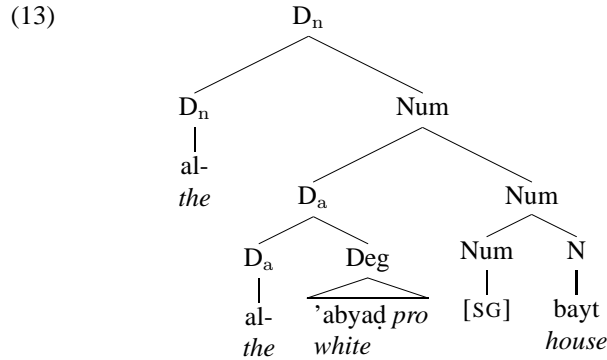
For convenience, I have used a predicate **of** to indicate possession.⁷ Again we see that the adjective phrase contains a variable that refers back to (the *R* role of) the head noun. This variable in the syntactic structure of (12a) is the resumptive pronoun *-hā* 'her' which is the possessor of *waġh* 'face'.

As we see, the adjectival D head functions as a binder for the resumptive pronoun present in the adjective phrase. However, when we look at the semantic structure, we see that there is only one operator that binds both occurrences of the variable x . In the syntactic structure, there are two binders: the nominal D and the adjectival D. This raises the question why the syntactic structure needs two binders.

This question becomes even more compelling when we examine the proposed tree structure for (12):⁸

⁷Note that the variable y is the *R* argument of the adjective's subject 'face'. It is irrelevant to the point at hand.

⁸The tree in (13) suggests that the surface order would be D-Adj-N. However, I assume that syntax is in fact more flexible, in that an adjunct is not linearly ordered with respect to the node it is adjoined to. Linear ordering takes place at PF, and in Arabic, adjectives are ordered after the nouns they modify. See Kremers (2003) for details.



The resumptive pronoun in the DegP is in the c-command domain of the nominal D_n , which would mean D_n should be able to bind it.

The answer to this question can be found in Chomsky's (1999) assumption that derivations are built up phase by phase. Chomsky (1998) defines phases on the basis of propositional content. Since the adjective phrase contains all the elements that make up a proposition (i.e. predicate, the predicate's arguments and a subject) we must assume that the adjective phrase is a phase. In other words, the adjective phrase is built separately, and only when it is finished is it included in the noun phrase.

It is reasonable to assume that the resumptive pronoun needs to be licensed locally, inside the phase it is contained in, i.e. adjective phrase. For this reason, a D head is added to the adjective phrase; such a D head ensures that the variable is bound, and in this way, licenses it.

The D head that is inserted must, of course, itself be identified. Because this D head is at the edge of the phase, it is arguable that this identification does not have to occur locally. There are basically two ways in which the D head can be licensed. Firstly, the adjective phrase can be used independently, as in (14):

- (14) al-ṭawīl-u
 the-tall-NOM
 'the tall one'

Here, the D head is identified in the same way that the D head of any noun phrase is identified.⁹ If the adjective phrase is merged inside a noun phrase, modifying the head noun, it will be bound by the noun's D head. In this case, the features of the nominal D are transferred to the adjectival D. These features include DEF and CASE, but also the φ -features. The φ -features are then transferred to the resumptive pronoun, which is bound by the adjectival D.¹⁰

⁹Which is presumably some interpretational process beyond the scope of syntax.

¹⁰The exact nature of the binding that takes place between the nominal and the adjectival D heads needs further explanation, because it is not the typical operator binding. I will leave this matter to future research.

4. Relative clauses

Thus far, I have developed an analysis of the DP-internal adjective phrase in Arabic. I claim that an adjective phrase has a clause-like structure, and that the adjective agrees with a subject internal to the DegP. Furthermore, I have shown that the adjective phrase contains a resumptive pronoun, and that the definiteness marker on the adjective plays a role in identifying this resumptive pronoun. In this section, I take a quick look at relative clauses, which appear to have a very similar structure.

A relative clause in Arabic is a clause with normal word order that follows the noun it modifies. The relative clause contains a resumptive pronoun and there is no *wh*-element.¹¹ The relative clause is introduced by a relative clause marker:

- (15) al-rağul_i alladī ra'aytu-hu_i
 the-man REL I.saw-him
 'the man that I saw'

The relative clause marker agrees with the antecedent in gender and number. In (15), *alladī* is marked for masculine singular. When the antecedent is feminine and/or plural, it takes a different form:

- (16) a. al-mar'a_i allatī ra'aytu-hā_i
 the-woman REL.SG.F I.saw-her
 'the woman that I saw'
 b. al-riğāl_i alladīna ra'aytu-hum_i
 the-men REL.PL.M I.saw-them
 'the men that I saw'
 c. al-nisā' allātī ra'aytu-hunna
 the-women REL.PL.F I.saw-them
 'the women I saw'

The relative marker also has dual forms. These forms have an additional property: they agree with the head noun in case:

- (17) lam 'ağidi -l-rağulayni -llađayni baħaṭā
 not I.found the-men.DUAL.ACC REL.M.DUAL.ACC they.DU.searched
 °an-nī
 for-me
 'I did not find the two men that were looking for me'

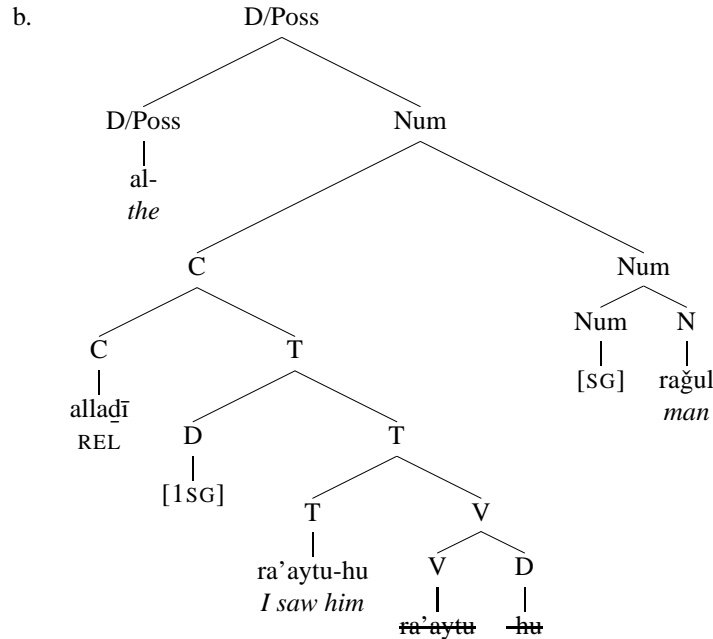
Note that the accusative case of the relative marker *allađayni* is the same as the case of the antecedent *al-rağulayni* 'the two men', but different from the nominative case of the (covert) resumptive pronoun in the relative clause (which in (17) is a *pro* subject). So we see that the relative marker agrees with the antecedent in gender, number and case. Interestingly enough, it also agrees in definiteness. When the antecedent noun is indefinite, the relative marker is dropped:

¹¹Substantive relative clauses, i.e. relative clauses without an antecedent, are formed with *wh*-elements, but I will not discuss those here.

- (18) ḡā'a bi kitāb-in ∅ lam yaqra'-hu ba' du
 he-came with book-GEN.INDEF (REL) not he.read-it yet
 'he brought a book that he had not read yet'

In (18), the antecedent *kitāb* 'book' is immediately followed by the relative clause. Like the previous cases, the relative clause contains a resumptive pronoun, but now there is no relative marker. These facts indicate that a relative clause in Arabic has a C head that contains the relative marker *alladī* and that agrees with the head noun. If we assume that relative clauses are adjoined to Num, just like adjectives, the structure of a phrase as in (19a) will be (19b):

- (19) a. al-raḡul_i alladī ra'aytu-hu_i
 the-man REL I.saw-him
 'the man that I saw'



The structure of (19) is very similar to the structure of the adjective phrase in (13) above. In the adjective phrase, the D head is bound by the matrix D. In (19), the C head is also bound by the nominal D head and receives its features in this way. Furthermore, the relative marker C binds the resumptive pronoun in the clause in the same way that the adjectival D binds the resumptive pronoun in the adjective phrase.

It turns out, then, that we do not need any extra assumptions to explain the agreement in relative clauses. Relative clauses use the same mechanisms that adjectives use.

5. Conclusions

In this paper, I have shown that adjectival agreement in Arabic consists of two separate agreement processes. First, there is agreement in the adjective phrase (DegP) between the predicate (the adjective) and its subject. This subject can be overt, but in most cases it will be *pro*. This *pro* will be identified through the second agreement process that takes place, which is a process of binding between the D head of the noun and the D head of the adjective. In this process, the features of the nominal D (definiteness, case, and φ -features), are transferred to the adjectival D.

The *pro* subject of the adjective functions as a resumptive pronoun that refers back to the head noun. If the DegP-internal subject of the adjective is not *pro* but overt, it will contain a resumptive pronoun, as genitive modifier or more deeply embedded as modifier of an argument of the subject. This pronoun will be realized overtly.

Both D heads in the structure function as operators binding variables in the projections they head. The nominal D head binds the *R* role of the noun, the adjectival D head binds the resumptive pronoun in the adjective phrase. Through this binding, the pronoun gets its φ -features. If the resumptive pronoun happens to be the subject of the adjective, the adjective will receive the same φ -features through agreement. The result of this is that the adjective will give the appearance of agreeing directly with the head noun, whereas in fact the agreement takes place indirectly, through the process described.

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