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On complex adjectival phrases in Standard Arabic

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In this paper, we present three puzzling observations concerning a class of adjectival constructions in Standard Arabic: (i) pleonastic definiteness, where an instance of definite morphology is semantically transparent, (ii) required resumption, where the absence of a resumptive pronoun leads to deviance, and (iii) case and agreement misalignment, where the domain for structural case assignment does not coincide with that for agreement marking. We then propose a resolution for these puzzles. Our proposal takes seriously the idea that semantics is purely interpretive, i.e. that the truth condition of the sentence is to be computed compositionally from its syntactic structure. The proposal includes two generalizations about case and agreement which turn out to concur to a large degree with widely accepted views on syntactic relations concerning these phenomena. The generalizations are (i) that arguments of 2-place predicates receive Accusative case and arguments of one-place predicates receive Nominative case, and (ii) that sentential nodes are barriers for agreement. Another conclusion of our proposal is that indices on pronouns can undergo movement which results in predicate abstraction and which exhibit properties of \bar{A} -movement.

Keywords: adjectives, case, agreement, definiteness, resumption

1. Presenting three puzzles

The empirical focus of this paper is on sentences such as (1), which have not, to the best of our knowledge, been studied systematically within modern linguistics theories.¹

1. Note that we use the following symbols for the corresponding Arabic sounds:

ʔ: glottal stop, ð: voiced dental fricative, ʕ: emphatic version of /t, d, s, ð/, ʒ: voiced postalveolar fricative, x: voiceless velar fricative, y: palatal glide, and j: voiceless postalveolar.

- (1) raʔay-tu at^s-t^faalib-a t^f-t^fawiilat-a qaamat-u-hu
 see.PRF-1S the-student.M-ACC the-tall.F-ACC figure.F-NOM-his
 “I saw the tall student.”

Note that the literal translation of (1) is ‘I saw the student whose figure is tall.’ In Arabic, ‘having a tall figure’ is synonymous with ‘being tall.’ Note, also, that (1) is not the only syntactic strategy to convey the proposition ‘I saw the tall student’ where the property ‘tall’ is expressed as ‘having a tall figure.’ The sentences in (2) are two other constructions which also do this.

- (2) a. raʔay-tu at^s-t^faalib-a ða al-qaamat-i t^f-t^fawiilat-i
 see.PRF-1S the-student.M-ACC with the-figure.F-GEN the-tall.F-GEN
 “I saw the student with the long figure.”
 b. raʔay-tu at^s-t^faalib-a allaðii qaamat-u-hu t^fawiil-at-un
 see.PRF-1S the-student.M-ACC that figure.F-NOM-his long-F-NOM
 “I saw the student whose figure is tall.”

This paper focuses on sentences of the same type as (1). The next three subsections present the puzzles to be resolved.

1.1 Pleonastic definiteness

We observe that there are two instances of definiteness in (1): *at^s-t^faalib-a* ‘the student’ and *t^f-t^fawiilat-a* ‘the tall (person).’

- (3) raʔay-tu at^s-t^faalib-a t^f-t^fawiilat-a qaamat-u-hu
 student[+def] tall[+def]
 “I saw the student who is a tall person” /
 * “I saw the student who is the tall person.”

However, the interpretation of the sentence involves only one instance of definiteness: the sentence presupposes that there is exactly one tall student but does not presuppose that there is exactly one student and exactly one tall person (cf. Heim, 1982, 1991; Heim & Kratzer, 1998).

1.2 Required resumption

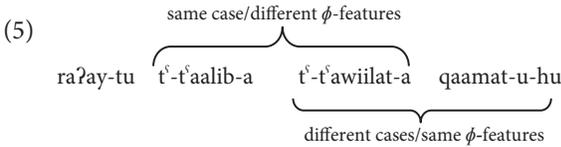
The sentence in (1) contains a resumptive pronoun, *hu*, whose presence is required: removing it from the sentence gives rise to ungrammaticality, as evidenced by (4).

- (4) *raʔay-tu at^s-t^faalib-a
 see.PRF-1S the-student.M-ACC

t^ʕ-t^ʕawiilat-a *qaamat-un*
 the-tall.F-ACC figure.F-NOM

1.3 Case and agreement misalignment

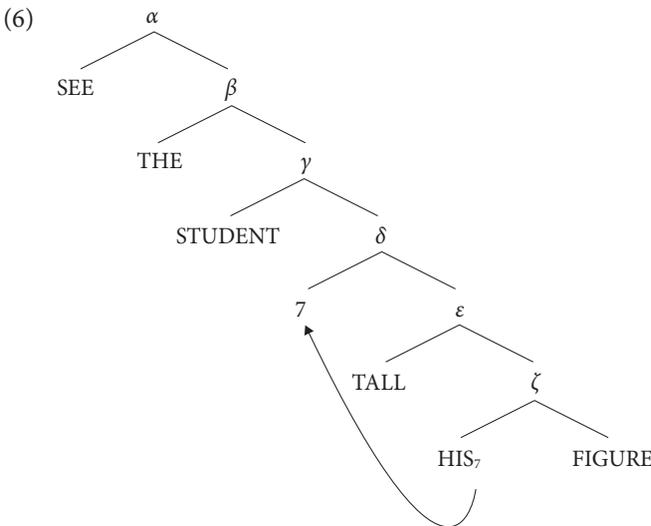
The sentence in (1) shows a misalignment in case and agreement: *t^ʕ-t^ʕawiil-a* ‘tall’ has the same case as the preceding but not the following XP, while it has the same ϕ -features as the following but not the preceding XP.



2. Resolving the puzzles

2.1 Accounting for pleonastic definiteness

We propose the following Logical Form for (1), abstracting from how it relates to the Phonetic Form. We use English words in small caps to represent their Standard Arabic counterparts.



The arrow indicates wh-movement of the index on the resumptive pronoun. The output of this movement, δ , is interpreted by Heim and Kratzer’s (1998) rule of Predicate Abstraction.

(7) Predicate Abstraction

If X dominates Y and an index i , then

$$\llbracket X \rrbracket^a = [\lambda x \in D_e . \llbracket \beta \rrbracket^{ax/i}], \text{ for any assignment } a.$$

We derive the following meaning for δ in (6).

$$(8) \quad \llbracket \delta \rrbracket^a = [\lambda x \in D_e . x\text{'s figure is tall}] = \text{the set of tall people}$$

The next higher node, γ , is interpreted by Heim and Kratzer's (1998) rule of Predicate Modification.

(9) Predicate Modification

If X has Y and Z as its daughters, then for any assignment a , if $\llbracket Y \rrbracket^a$ and $\llbracket Z \rrbracket^a$ are both in $D_{\langle e, t \rangle}$, then $\llbracket X \rrbracket^a = [\lambda x \in D_e . \llbracket Y \rrbracket^a(x) = \llbracket Z \rrbracket^a(x) = 1]$

We derive the following meaning for γ in (6).

$$(10) \quad \llbracket \gamma \rrbracket^a = [\lambda x \in D_e . x \text{ is a student} \wedge x\text{'s figure is tall}] = \text{the set of tall students}$$

We then assume Heim and Kratzer's (1998) definition of THE, which is (11).

$$(11) \quad \llbracket \text{THE} \rrbracket^a = [\lambda P \in D_{\langle e, t \rangle} : |P| = 1 . \text{the unique } x \text{ such that } P(x) = 1]$$

The sister of SEE is then interpreted by the Heim and Kratzer's (1998) rule of Functional Application,

(12) Functional Application

If Y and Z are daughters of X and $\llbracket Y \rrbracket^a$ is a function whose domain contains $\llbracket Z \rrbracket^a$, then $\llbracket X \rrbracket^a = \llbracket Y \rrbracket^a (\llbracket Z \rrbracket^a)$.

We derive the following meaning for β in (6).

$$(13) \quad \llbracket \beta \rrbracket^a = \text{the unique } x \text{ such that } x \text{ is a tall student} = \text{the student}$$

Thus, the structure in (6) accounts for the fact that there is only one interpreted instance of definiteness. Specifically, (6) ends up presupposing that there is exactly one tall student: it does not presuppose there is exactly one student, nor does it presuppose there is exactly one person.²

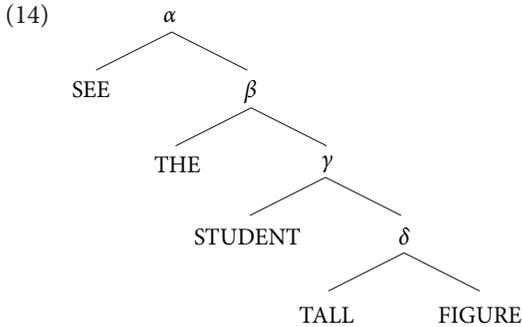
2. Our analysis can be extended to cases of attributive adjectives, where pleonastic definiteness is also observed:

- (i) cʔat^ʕ-t^ʕaalib-u t^ʕ-t^ʕawiil-u yarqus^ʕu
 the-student.NOM the-tall.NOM 3.SM.dance.IMF
 "The tall student is dancing."

We thank an anonymous reviewer for pointing this out.

2.2 Accounting for required resumption

The structure of (4) is presumably (14).



The nodes δ and γ will be interpreted by Predicate Modification, resulting in (15).

$$(15) \llbracket \gamma \rrbracket^a = [\lambda x \in D_e . x \text{ is a student} \wedge x \text{ is a tall person} \wedge x \text{ is a figure}] = \emptyset$$

This means that $\llbracket \beta \rrbracket^a$ will not be in the domain of $\llbracket \text{THE} \rrbracket^a$, since $|\emptyset| = 1$. Thus, β will be uninterpretable. We submit that the cause of the deviance of (4).³

Our account of required resumption also predicts that embedding the constituent ζ of (6) in a conjunctive phrase will result in ungrammaticality, since movement of the index will violate the Coordinate Structure Constraint (Ross, 1967). This prediction is correct, as evidenced by the deviance of (16).⁴

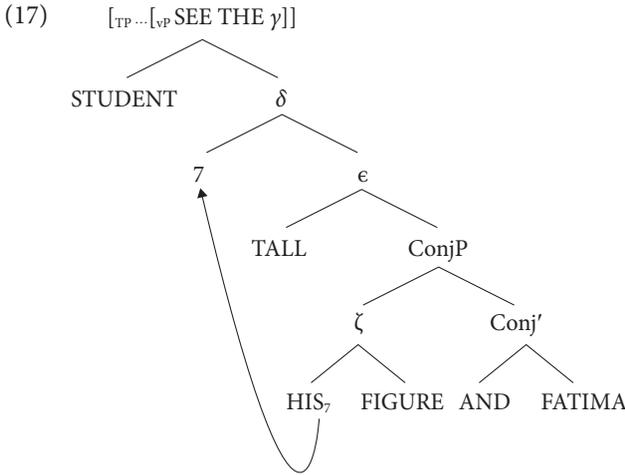
3. We are aware that explaining ungrammaticality in terms of presupposition failure in this way raises questions about expressions such as *the square circle* or *the king of France*. These are all cases of the definite article combining with an empty predicate. Why are they well-formed? More generally, when does semantic deviance lead to ungrammaticality and when does it not? This is an issue which has been at the center of lively debate for quite a long time and is still far from settled (cf. Barwise & Cooper, 1981; von Stechow, 1993; Krifka, 1995; Gajewski, 2003; Chierchia, 2006; Fox & Hackl, 2006; Abrusán, 2007). We hope that the questions raised by our account of required resumption observed in (4), while they will not be answered by us in this talk, will be a research problem towards a better understanding of the interface between logic and grammar.

4. An objection was raised against our example by an anonymous reviewer: (16) might be semantically deviant, as TALL is intended to apply “metaphorically” to FIGURE and “literally” to FATIMA. However, this objection can be met by constructing another example with the same syntactic profile in which the adjective is certainly applicable to both nouns in the same sense.

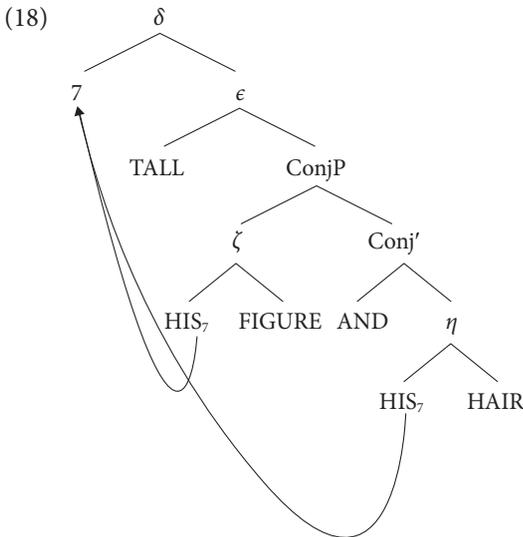
(i) *raʔay-tu at^s-t^aalib-a l-qawiyat-a ʔumm-u-hu wa fatimat-u
 see.PRF-1s the-student.M-ACC the-strong.F-ACC mother.F NOM-his and fatima.F-NOM
 (“I saw the student x such that x ’s mother is strong and Fatima is strong”)

- (16) *raʒay-tu at-tʰaalib-a tʰ-tʰawiilat-a qaamat-u-hu wa
 see.PRF-1S the-student.M-ACC the-tall.F-ACC figure.F-NOM-his and
 fatimat-u
 fatima.F-NOM
 (“I saw the student x such that x is tall and Fatima is tall”)

Presumably, (16) has the structure in (17).



We also predict that replacing FATIMA in (17) with HIS₇ HAIR would rescue the sentence, due to the possibility of ATB-movement, as represented in (18).



This prediction is correct: (19) is perfectly acceptable.

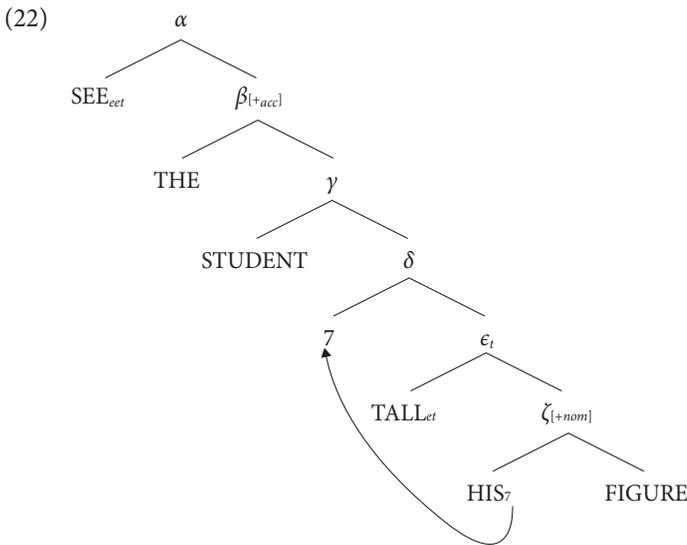
- (19) raʕay-tu at^s-tʕaalib-a t^s-tʕawilat-a qaamat-u-hu wa
 see.PRF-1S the-student.M-ACC the-tall.F-ACC figure.F-NOM-his and
 ʃaʕar-u-hu
 hair-NOM-his
 “I saw the student whose figure and hair are long”

2.3 Accounting for case and agreement misalignment

We start with two descriptive generalizations. These will be derived from more general assumptions in Section 3.

- (20) Case Generalization (CG)
 (i) Arguments of predicates of type $\langle e, \langle e, t \rangle \rangle$ receive ACC
 (ii) Arguments of predicates of type $\langle e, t \rangle$ receives NOM
- (21) Agreement Generalization (AG)
 Nodes of type t are barriers for agreements

Here is (6) with the addition of types and cases for the relevant constituents.



From CG it follows that β receives ACC and ζ receives NOM, which means, given familiar locality constraints, that all nodes dominated by β bear ACC except those dominated by ζ , which bear NOM. This is exactly what is observed. From AG it follows that there can be no agreement between something which is a sub-constituent of ϵ and something which is not, or more specifically, between TALL and STUDENT. This is also what is observed. Importantly, neither δ nor STUDENT

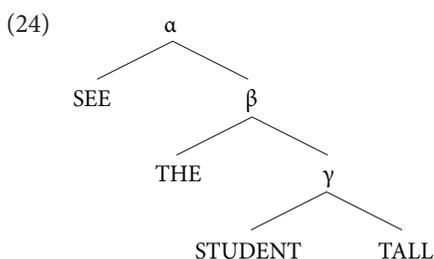
receives NOM, even though both are sisters of an $\langle e, t \rangle$ node. This is, of course, because neither δ nor STUDENT is an argument of the other: they compose by way of Predicate Modification.

Note that the domain for ϕ -feature agreement does not correlate with the domain for (structural) case assignment (cf. Bobaljik, 2006).

Given AG, we make the following prediction: if instead of δ we just have the predicate TALL, agreement between the head noun STUDENT and TALL would occur. This prediction is correct, as evidenced by the acceptability of (23).

- (23) raʒay-tu at^t-t^aalib-a t^t-t^aawiil-a
 see.PRF-1S the-student.M-ACC the-tall.M-ACC
 ‘‘I saw the tall student.’’

Presumably, the structure of (23) is (24).



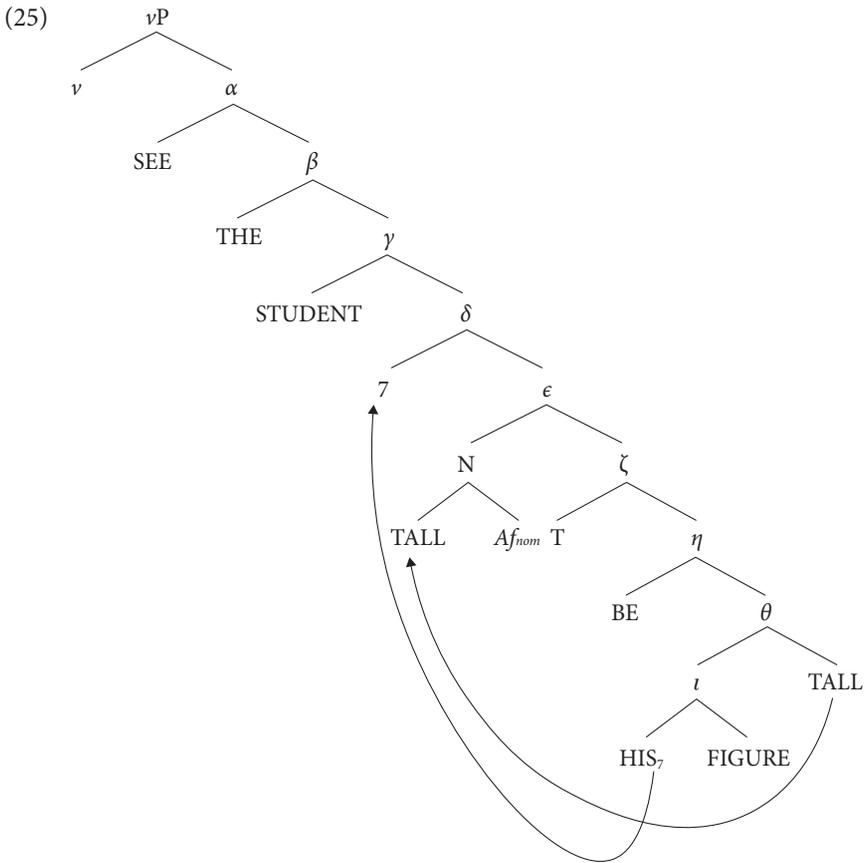
We now turn to the derivation of the two descriptive generalizations CG and AG.

3. Deriving CG and AG

We propose that (22) is to be analyzed in more detail as in (25), where Af_{nom} is the null ‘‘nominalizing’’ affix (cf. Aldholmi, 2015).

For present purposes, we assume that BE, T and Af_{nom} are semantically empty. Furthermore, we assume that movement of TALL does not leave a trace/copy, which means TALL is interpreted only at the derived position.⁵

5. The reason for this might be that only movement to a c-commanding position can create traces/copies, as these must be bound. Movement of TALL in (25) is not to a c-commanding position.



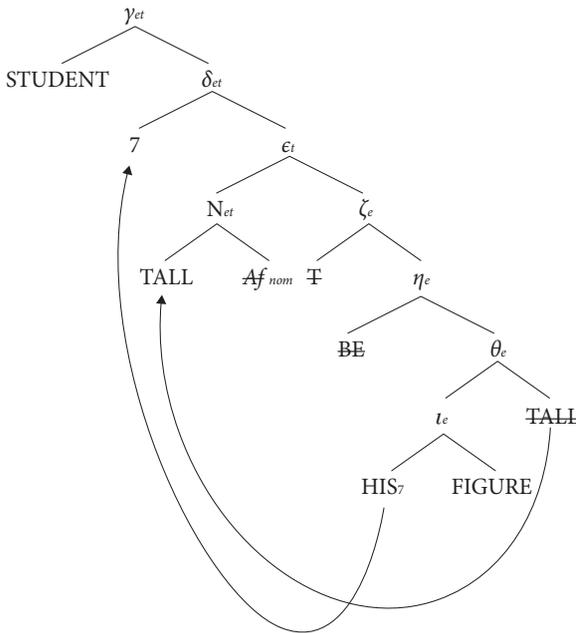
We are thus left with two options: (i) it is the higher copy of TALL which gets interpreted, or (ii) it is the lower copy of TALL which gets interpreted.⁶ These two options are represented in (26) and (27), respectively, with strikethrough indicating non-interpretation.⁷

6. The option of interpreting both copies as a chain is ruled out, since the higher copy does not c-command the lower one (cf. Heim & Kratzer, 1998; Fox, 2003).

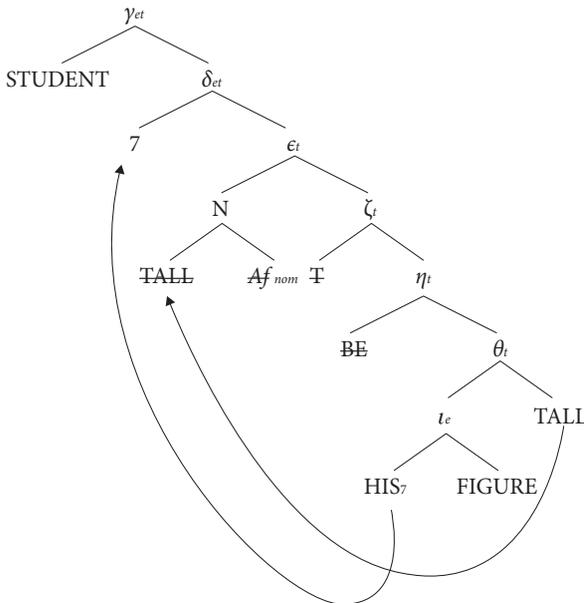
7. Note that the assumption that T is semantically empty is meant to hold for the cases we consider in this paper only. There is evidence that T in such structure as (26) can be realized, and semantically interpreted. Consider (i).

- (i) raʔay-tu at^f-tʔaalib-a l-qawiyat-a kaanat ʔumm-u-hu
 see.PRF-1s the-student.M-ACC the-strong.F-ACC be.PAST mother.F-NOM-his
 (“I saw the student x such that x’s mother was strong”)

(26)



(27)



The facts considered until now do not decide between (26) and (27). Nevertheless, we submit that (26) is the correct analysis. The empirical justification for our claim is presented in the next section. CG and AG would then be derived from the rather standard assumptions in (28a) and (28b), respectively.

- (28) a. v assigns ACC and T assigns NOM
 (cf. Pesetsky & Torrego, 2011, and references therein)
- b. Nodes of type t are phases, which are islands for agreement
 (cf. Chomsky, 2001, et seq.)

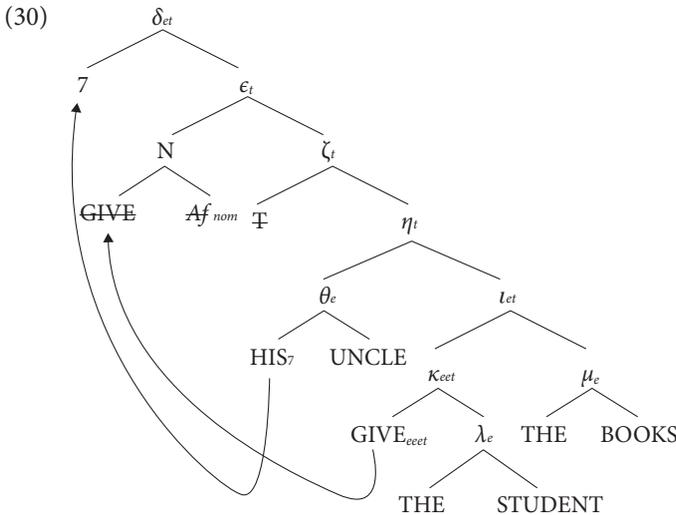
Agreement between TALL and HIS₇ FIGURE is thus established within θ , not ϵ .

4. Extending the analysis to transitive predicates

Our analysis can be extended to account for judgements on more complex adjectival phrases such as those which contain ditransitive predicates, for Example (29).

- (29) raḡay-tu at^f-t^fullaab-a
 see.PRF-1S the-student.M.PL-ACC
 l-maanih-a xaal-u-hum
 the-giver.M.SG- ACC uncle.M.SG-NOM-their
 t^f-t^faalibat-a l-kutub-a
 the-student.F.SG-ACC the-book.M.PL-ACC
 “I saw the students whose uncle gave the female student the books.”

The modifier of STUDENT is (30). Obviously, it must be the lower copy of GIVE that gets interpreted, because interpretation of the upper copy would founder on type mismatch.



We take this to be evidence for (27) and against (26) and leave the derivation of this fact for future research.

The agreement between the nominalized verbs or adjectives and the head noun holds obligatorily of gender, but not always of number. As pointed out by one reviewer, the nominalized adjective is obligatorily singular if the following noun is singular or dual and is also singular even when the following noun is plural.

- (31) raʔay-tu r-raʒul-a
 see.PRF-1S the-man-ACC
 al-kariim-a ʔabnaaʔ-u-hu
 the-generous-ACC sons-NOM-his
 ‘I saw the man whose sons are generous’

We take these to be similar to the standard known cases of agreement asymmetries in Arabic. When the predicate precedes the subject, partial agreement is obligatory. When the subject precedes the predicate, full agreement is obligatory. All things being equal, we adopt the analysis proposed in Soltan (2007) which claims that SVO and VSO sentences have two different underlying structures.

- (32) a. SVO structure
 [_{TP} DP_{subj} T [_{VP} pro [_{VP} V DP_{obj}]]]
 b. VSO structure
 [_{TP} T [_{VP} DP_{subj} [_{VP} V DP_{obj}]]]

In the SVO structure T must be Phi-complete (required by the identification of pro). In the VSO structure, T is Phi-incomplete. We take the lower TP in (30) to have the VSO structure with a Phi-incomplete T which explains the partial agreement facts.

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