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## Evidence for DegP

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**1. Introduction**

The fate of the category Adjective Phrase has long been an unhappy one. Its internal structure and the extractability of constituents contained within it have generally not been studied very extensively. The purpose of this paper will be to deepen our insight into the internal syntax of this category and to provide evidence from Dutch and English supporting the existence of a Degree Phrase structure (see also Brame (1982), Abney (1987), Bowers (1987)) as in (1a) and arguing against the traditional AP-structure as in (1b) (see a.o. Bowers (1975), Jackendoff (1977)).

- 1a. [DegP spec [Deg Deg<sup>0</sup> [AP spec [A' mod [A' A<sup>0</sup> PP]]]]]  
 b. [AP [DegP] [A' A<sup>0</sup> PP]]

The elements heading a Degree Phrase (= DegP) are members of the sets given in (2a and b).

- 2a. Dutch: {hoe, zo, te, even, meer, minder}  
 b. English: {how, so, too, as, more, less, this, that}

The degree word heads the maximal projection DegP and takes an AP as its complement. I further assume that the specifier-position of DegP can be filled with various types of elements (in particular measure phrases; see (3)), and that modifiers like *very* (Dutch: *erg*), *extremely* (Dutch: *vreselijk*) etc. appear inside AP.

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- 3a. [2 cm te lang]  
 [2 cm too tall]  
 b. [zes mijl te ver]  
 [six miles too far]  
 c. [vijf keer zo snel]  
 [five times as fast]  
 d. [3 centimeter minder lang dan Bill]  
 [3 centimeter less tall than Bill]

## 2. Some notes on the complement structure of adjectives

Before presenting evidence in favor of a DegP-structure as given above, I will briefly comment on certain aspects of the PP-complement structure of adjectives in languages such as English and Dutch. In English, complementation to the adjective is straightforward: PP-complements always occur to the right of the adjective (e.g. *proud of Mary*, *angry with Bill*). This order may be derived from the theta-assignment directionality parameter as proposed by Koopman (1984) and Travis (1984): English adjectives assign their theta-role to the right and therefore complements of adjectives are base-generated to the right of them. In Dutch, the complementation of adjectives is more complex. In general, PP-complements can appear on both sides of the adjectival head, as is exemplified in (4):<sup>1</sup>

- 4a. ...dat Jan [verliefd op Marie] / [op Marie verliefd] is  
 ...that John in-love with Mary / with Mary in-love is  
 b. ...dat ze [daarvan afhankelijk] / [afhankelijk daarvan] is  
 ...that she there-on dependent / dependent there-on is

Three analytical options are available for the PPs in (4): (i) the PP-complement is base-generated in a pre-adjectival position at D-structure, and post-adjectival PPs are extraposed and Chomsky-adjoined to AP, forming a theta-chain with a theta-marked PP-trace in pre-adjectival position; (ii) the PP-complement occurs to the right of the adjective at D-structure and is left-adjoined to the AP at S-structure, also creating a theta-chain, but now with a trace in post-adjectival position; (iii) the PP-complement can freely occur in pre- or post-adjectival position, and be theta-assigned in that position under government by the adjectival head. If (i) or (ii) were correct, the assignment of a theta-role would be a directional process, and in that case one would expect a different behavior of pre-adjectival and post-adjectival PP-complements. If (iii) were correct, theta-marking would be non-directional for this class of adjectives, and in that case we would expect that the PP-complements behave in a similar way, independently of the superficial position they occupy.

An argument in favor of the non-directionality of theta-role assignment comes from the extractability of R-pronouns from within PP-complements of adjectives. The preposition of both a pre-adjectival and post-adjectival PP may be stranded by R-movement:

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- 5a. Het meisje waar<sub>i</sub> Jan [[t<sub>i</sub> op] verliefd] was geweest heette Sue  
 The girl where John with in-love had been was-called Sue
- b. Het meisje waar<sub>i</sub> Jan [verliefd [t<sub>i</sub> op]] was geweest heette Sue  
 The girl where John in-love with had been was-called Sue
- 6a. [Er<sub>i</sub> vreselijk [t<sub>i</sub> op] verliefd] zei Jan dat ie was geweest  
 There extremely with in-love said John that he had been
- b. [Er<sub>i</sub> vreselijk verliefd [t<sub>i</sub> op]] zei Jan dat ie was geweest  
 There extremely in-love with said John that he had been

Notice that in (6) the adjective phrase occupies the [Spec,CP] of the matrix clause. This shows that the strings *er vreselijk op verliefd* and *er vreselijk verliefd op* are constituents. These sentences also illustrate that the R-pronoun *er*, which originates within the PP, can be left adjoined to the adjective phrase.

This P-stranding behavior follows from the theory, if theta-assignment can go in both directions. In that case, both the pre-adjectival and the post-adjectival PP-complement are L-marked (i.e. assigned a theta-role by a lexical category) and therefore accessible to movement operations. If, on the other hand, one of the positions which the PP can occupy is derived, then one expects removal of the R-pronoun to be somewhat worse, since the R-pronoun would be extracted from a non-L-marked category.

Notice that the adjectives in (5) and (6) behave differently from the category V in Dutch. As Koopman (1984) has convincingly shown, theta-marking by V is a directional process. Verbs assign their theta-role to the left in Dutch. Consequently, postverbal PPs are interpreted as forming a chain with a preverbal PP-trace. Those postverbal PPs, which presumably are adjoined to IP, are islands for P-stranding (cf. Koopman (1984)):

- 7a. Waar<sub>i</sub> heb jij [t<sub>i</sub> op] gerekend?  
 Where have you on accounted
- b.\* Waar<sub>i</sub> heb jij t<sub>j</sub> gerekend [t<sub>i</sub> op]<sub>j</sub>?  
 Where have you counted on

That removal of an R-pronoun from within an extraposed PP gives somewhat worse results (possibly because of a weak subjacency violation) is shown by the following examples:

- 8a. [Er<sub>i</sub> een stuk minder [t<sub>i</sub> van] afhankelijk dan Jo] was Jan geweest!  
 There a lot less on dependent than Joe had John been  
 'John was much less dependent on it than Joe'
- b. [Er<sub>i</sub> een stuk minder afhankelijk [t<sub>i</sub> van] dan Jo] was Jan geweest!  
 There a lot less dependent on than Joe had John been
- c.?? [Er<sub>i</sub> een stuk minder afhankelijk t<sub>j</sub> dan Jo [t<sub>i</sub> van]<sub>j</sub>] was Jan geweest!  
 There a lot less dependent than Joe on had John been

In (8a), the R-pronoun has been removed from within the left branch PP-complement of the adjective to a position left adjoined to DegP. Extraction from within the PP is permitted, since the PP is L-marked. In (8b), the R-pronoun is reordered out of a right branch PP-complement and is moved to a position adjoined to DegP. Here again, the well-formedness of this structure is expected on the assumption that the PP is L-marked by the adjective. Sentence (8c) is clearly worse than the other two. In this sentence, the R-pronoun is moved out of an extraposed PP-complement which is presumably right adjoined to DegP. The somewhat worse status of this structure may be due to a weak subadjacency violation. After extraposition, the PP is no longer L-marked by the adjective and therefore an L-barrier for the fronted R-pronoun.

An extra problem for the assumption that PP-complements are only base-generated to the right of A<sup>0</sup> would be the fact that one would predict that the PP-complements after having been moved to the left would always appear in a position peripheral to (i.e. to the left) of the adjuncts, which hang from A'. As the following examples show, however, the PP-complement can occur both to the right and to the left of such adjuncts:

- 9a. [Heel nauw [daaraan] verwant] is Jan  
Very closely there-to related is John
- b. [[Daaraan] heel nauw verwant] is Jan
- 10a. [Tamelijk goed [daartegen] bestand] is Jan!  
Reasonably well there-against proof is John
- b. [[Daartegen] tamelijk goed bestand] is Jan!

The order in the a-sentences would be problematic if the adjunct would hang from A'. It would mean that the PP originating from a post-adjectival position would be moved to a position adjoined to A'. Under the assumption that maximal projections (PP) cannot be adjoined to A' because of the structure preservingness requirement on adjunction operations, adjunction of the PP-complement is not possible.<sup>2</sup>

Given the above-mentioned facts, let us make the assumption that PP-complements can be base-generated both to the left and to the right of the adjective in Dutch.<sup>3</sup>

### 3. Evidence for DegP

After this brief discussion of the PP-complementation system of adjectives, let us return to the DegP-structure given above and provide some arguments supporting this structure. Let us first try to determine in what way degree words differ from modifiers such as *very*, *extremely*, etc. Are their syntactic contexts in which degree words behave differently from these modifiers?

One piece of evidence which suggests that degree elements form a special class and should be distinguished from modifiers such as *very*, *extremely* etc. is their behavior in *though*-preposing contexts. It is impossible for adjective phrases containing degree words to be moved in a position immediately before *though*, whereas it is generally

permitted to move an adjective phrase containing an adjectival modifier like *very* into the same structural position. This contrast is exemplified in (11) and (12) (the examples in (12) are taken from Culicover (1980)):

- 11a. Though the house is very expensive, .....  
 b. Very expensive though the house is, .....
- c. Though John is extremely keen on sports, ...  
 d. Extremely keen on sports though John is, ...
- 12a. Though Fred is so tall, he rarely tries to touch the rim  
 b.\* So tall though Fred is, he rarely tries to touch the rim
- c. Though Mary is too shy (for her own good), she manages to get along  
 d.\* Too shy (for her own good) though Mary is, she manages to get along
- e. Though diamonds are (much) harder than glass is, this one couldn't cut a thing  
 f.\* (Much) harder than glass is though diamonds are, this one couldn't cut a thing

Whatever the explanation for this contrast, it turns out that only those adjective phrases can undergo fronting that do not contain a degree word of the above-mentioned set.

This common behavior of adjective phrases containing degree words is also shown by the following strings, in which the adjective phrase containing a degree word appears in a position preceding the indefinite article.

- 13a. So big a car  
 b. Too big a car  
 c. How big a car  
 d. That big a car

It is impossible for adjective phrases containing an adjectival modifier to occur in a position preceding the indefinite article:

- 14a.\* Very big a car  
 b.\* Extremely big a car

Given these facts, I assume that the degree words should not be treated on a par with modifiers such as *very* and *extremely*.

Dutch also distinguishes the class of degree words from the class of adjectival modifiers. The former cannot appear in so-called exclamative wh-phrases, the latter can (see Corver (1990)):

- 15a.\* Wat een te/minder/zomooie vrouw!  
 What a too/less/so beautiful woman
- b. Wat een erg/belachelijk/ontzettend/vreselijk mooie vrouw!  
 What a very/ridiculously/terribly/extremely beautiful woman

If it is assumed that degree words occupy a position different from modifiers such as *very* and *extremely*, then it should be possible syntactically to have structures in which both a degree word and a modifier appear. In fact, there are such structures:

- 16a. [How [very interesting]]!  
 b. [How [very nice of you to invite me]]!  
 c. The talk was [so [very interesting]]

In these exclamative degree phrases the Deg-position is filled by the exclamative degree words *how* and *so*. Presumably these words are not modifiers contained within the AP *very*, since normally *very* cannot be modified:

- 17 \* The play was [incredibly very interesting]

Similar facts can be found in Dutch:

- 18a. [Zo [[heel erg] knap]] is ze anders niet!  
 So quite very pretty is she however not  
 'She is not that pretty at all'
- b. Ik vond haar [zo uitermate geschikt voor deze baan dat ik  
 I considered her so extremely capable of that job that I  
 haar meteen in dienst nam]  
 her immediately took-on

In these constructions, the degree word *zo* is the head of the DegP. In (18a), it takes the AP *heel erg knap* as its complement and in (18b) the AP *uitermate geschikt voor deze baan*. The APs *heel erg* and *uitermate* function as modifiers within AP. Notice that the degree word *zo* cannot be interpreted as modifying *heel* or *uitermate*, since these elements cannot be combined with modifiers expressing a degree:

- 19a.\* Jan was [[vreselijk heel] boos]  
 John was terribly very angry
- b.\* Jan was [[vreselijk uitermate] boos]  
 John was terribly extremely angry

I will now discuss some facts which seem to support a DegP-structure as given in (1a). A first advantage of the DegP-structure is that it makes it possible to derive comparative forms like *taller* and *sicker* by the general head to head movement rule. As is well-known, the comparative morpheme *-er* alternates with the pre-adjectival *more*. I will assume that both elements are base-generated in the Deg<sup>0</sup>-position. The comparative morpheme *-er*, however, must be attached to a head. This happens after left adjunction of the adjectival head (e.g. *tall*, *sick*) to it. This formation of the comparative form is an instance of a much more general head to head movement phenomenon, which we also find, for example, in the formation of inflected verbs (V to I).<sup>4</sup>

20 [DegP [Deg -er] [AP A<sup>o</sup> XP]]

In a standard AP analysis, it is generally assumed that the comparative morpheme is base-generated in the spec-position of AP (cf. Emonds (1976)), i.e. the position that also contains *more* as in *more anxious*. There are two possibilities to create a form like *taller*. Either one moves the *-er* morpheme to the adjectival head, or one moves the adjectival head to the comparative morpheme that occupies the spec-position of AP. Both movement operations are quite unusual and I know of no equivalent operations for other syntactic phenomena. The head to head movement operation as it occurs in the DegP-structure, on the other hand, is a much more general movement pattern.

Another phenomenon which is explainable under a DegP-analysis, but not so easily under a standard AP-analysis concerns the possibility of having an empty complementizer in English tensed degree clauses. As Stowell (1981) has pointed out, complementizers of declarative clauses can be empty if they are within the government domain of an appropriate head.<sup>5</sup> Consider, for example, the following sentences:

- 21a. John realized [that he was a fool]  
 b. John realized [ he was a fool]
- 22a. John was aware [that he had to eat well]  
 b. John was aware [ he had to eat well]
- 23a. [That Bill was lying] was obvious  
 b.\* [ Bill was lying] was obvious

In (21b) and (22b), the complementizer can be empty because it is within the government domain of a proper head, viz. V and A respectively. In (23b), the complementizer is governed by INFL. The ill-formedness of this sentence shows that INFL is not a proper licenser of an empty complementizer.

Consider also the following examples:

- 24a. John realized during the party that he was a fool  
 b.?\* John realized during the party he was a fool
- 25a. John was aware yesterday that he had to eat well  
 b.?\* John was aware yesterday he had to eat well

The impossibility of having an empty complementizer in these sentences is caused by extraposition of the tensed clause. After extraposition the tensed clause is adjoined to VP. V does not govern elements adjoined to VP. Hence, an empty complementizer cannot occur there since it will not be governed by the head by which it is selected.<sup>6</sup>

Now look at the following examples containing a clause which is selected by a degree word:



- 26a. John is [so tall *that* he can look over everyone]  
 b. John is [so tall -- he can look over everyone]

The b-sentence shows that the complementizer of the degree clause can be empty. In a standard AP-analysis, the degree clause is extraposed from within a Degree Phrase occupying the [Spec,AP]-position and subsequently adjoined to AP. As we have seen, normally empty complementizers are impossible if the CP has been extraposed, since it is no longer within the government domain of the head of which it is a complement. This is also shown by the following examples, in which the sentential complement of *so* is adjoined to VP and therefore no longer within the government domain of Deg<sup>o</sup>.

- 27a.\* Jan was [so tired t<sub>i</sub>] [after the game] [- he fell asleep]<sub>i</sub>  
 b.\* John was [so tall t<sub>i</sub>] [during his youth] [- he could look over everyone]<sub>i</sub>

The contrast between (26) and (27) is problematic for a traditional AP-analysis of these structures. One would expect that (26b) is ill-formed as well, since the CP containing the empty complementizer has been extraposed and therefore is no longer within the government domain of the head (Deg) by which it is selected.

Notice that under a DegP-analysis, the Deg-head always governs the selected CP in structures like (26). No extraposition has taken place. So, the COMP is always within the government domain of the degree word. Hence, the complementizer can be absent, as long as the clause is DegP-internal.

Another phenomenon supporting a DegP-structure concerns P-stranding within *than*-phrases. Under a standard AP-analysis, the *than*-phrase is a sister of the comparative formative (*more*, *-er*) that occupies the specifier position of AP. AP-internal extraposition derives the surface order *taller than Bill* from the underlying order *[[*-er than Bill*] tall]*. It is assumed that the *than*-phrase is adjoined to AP (cf. Bowers (1975)). In general, extraction possibilities get worse after extraposition of the constituent containing the element that must undergo movement. This is exemplified below:

- 28a.\* Who<sub>i</sub> was John [proud t<sub>j</sub>] yesterday [of t<sub>i</sub>]<sub>j</sub>?  
 b.\* Which girl<sub>i</sub> did you see [a picture t<sub>j</sub>] yesterday [of t<sub>i</sub>]<sub>j</sub>?

- 29a. Who<sub>i</sub> was John [proud [of t<sub>i</sub>]] yesterday?  
 b. Which girl<sub>i</sub> did you see [a picture [of t<sub>i</sub>]] yesterday?

Given the islandhood of extraposed PPs, one would expect the same for extraposed prepositional *than*-phrases. It turns out, however, that complements of *than* can be reordered out of the *than*-phrase:

- 30a. Who<sub>i</sub> is John [taller [than t<sub>i</sub>]]?  
 b. Which man<sub>i</sub> do you consider Bill [stronger [than t<sub>i</sub>]]?

Notice that extractions are impossible if the *than*-phrase is extraposed to a position outside the DegP.

- 31a. John was taller [at the time] than me  
 b. I considered Bill stronger [at the time] than me
- 32a.\* Who<sub>i</sub> was John [taller t<sub>j</sub>] at the time [than t<sub>j</sub>]?  
 b.\* Who<sub>i</sub> did you consider John [stronger t<sub>j</sub>] at the time [than t<sub>j</sub>]?

Under a DegP-analysis, no extraposition of the *than*-phrase has taken place. The *than*-phrase can be base-generated as a right branch constituent within the DegP-projection (as in (33)). In that case, no island is created because of extraposition.

33 [DegP [Deg' -er [AP tall]] [than who]]

I will now discuss a second extraposition argument which seems to support a DegP structure. It concerns the structure of Dutch adjectival phrases in which the head is surrounded by the degree word *zo* ('so') and the adjective *mogelijk* ('possible'). An example is given in (34):

- 34 Ik zoek een [zo lang mogelijke] jongen  
 I search (for) a so tall possible boy  
 'I am looking for a boy as tall as possible'

That *mogelijk* in constructions like (34) really is an adjective is shown by the fact that it bears the agreement marker (inflection *-e*) of the attributive adjective. There is a selectional relation between the degree word and the adjectival modifier. This is shown by the fact that the adjectival modifier cannot occur within the DegP without the degree word, as is exemplified in (35):

- 35 \* Ik zoek een [lang mogelijke] man  
 I search (for) a tall possible man

In a traditional AP-structure, the adjective *mogelijk* presumably originates as a complement of the degree word *zo*, which is the head of the left branch specifier Degree Phrase of AP:

36 [AP [DegP zo mogelijk] lang]

In order to get the superficial structure *zo lang mogelijk*, the adjective phrase *mogelijk* must be extraposed and adjoined to AP. So, the operation is very similar to prepositional *dan*-phrase-extraposition. The problematic part of this analysis, however, is that normally adjectival elements do not undergo extraposition in Dutch. The following sentences, for example, show that an adjective phrase cannot be moved from a preverbal position to a postverbal one:

- 37a. Ik geloof dat Jan [sterk] is  
 I believe that John strong is
- b.\* I geloof dat Jan t<sub>i</sub> is [sterk]<sub>i</sub>

Notice further that if one assumes that *mogelijk* can be extraposed, then one also expects that it can be extraposed to a position outside of the AP, for example a postverbal position. Comparison of the extraposition behavior of the AP *mogelijk* and the prepositional *dan*-phrase shows, however, that *mogelijk* cannot be moved further rightwards to a postverbal position.

38a. Ik geloof dat Jan zich [[zo t<sub>i</sub>] klein [mogelijk]<sub>i</sub>] maakte  
I believe that John himself so small possible made

b.\* Ik geloof dat Jan zich [zo klein t<sub>i</sub>] maakte [mogelijk]<sub>i</sub>

39a. Ik geloof dat Jan zich [minder [t<sub>i</sub>] klein [dan Piet]<sub>i</sub>] maakte  
I believe that John himself less small than Pete made

b. Ik geloof dat Jan zich [minder klein t<sub>i</sub>] maakte [dan Piet]<sub>i</sub>

In the a-examples, extraposition has taken place AP-internally. The b-examples show that the AP *mogelijk* cannot be extraposed to a postverbal position as opposed to the prepositional *dan*-phrase. If the AP *mogelijk* can undergo extraposition, then it is unclear why it cannot be moved further rightwards.

So, generating sequences like *zo lang mogelijk* within a traditional AP-structure has some problems. Under a DegP-structure as in (1a), *mogelijk* can be base-generated in a position within the Degree Phrase to the right of the adjective, as in (40). This way, no extraposition is needed within the adjective phrase. Furthermore, the generalization that adjective phrases cannot be extraposed is without exceptions under this analysis.

40 [DegP [Deg' zo [AP lang]] mogelijk]

Another argument supporting the DegP-structure comes from Neijt's (1979) generalization that emphatic coordinating conjunctions (e.g. *niet alleen .... maar ook* ('not only .... but also')) may only conjoin maximal projections. Consider the following sentences:

41a. De vorst zocht [een [zo [niet alleen [rijk] maarook  
The king looked-for a so not only rich but also

[dapper]] mogelijke] ridder] voor zijn dochter  
brave possible knight for his daughter  
'For his daughter, the king was looking out for a knight who was both as rich as possible and as brave as possible'

b. Ik zoek een [zo [hetzij [rijk] hetzij [mooi]] mogelijke] vrouw  
I search a so either rich or pretty possible woman  
'I am looking for a woman who is either as rich as possible or as beautiful as possible'

c. [Er<sub>i</sub> heel wat [minder [zowel [verliefd t<sub>i</sub> op] als [trots t<sub>i</sub>  
There very much less both in-love with and proud

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op]]]] was Jan geweest!  
 of had John been  
 'Muchless in love with her and proud of her was John!'

- d. [Heel wat [minder [er<sub>i</sub> zowel [verliefd t<sub>i</sub> op] als [trots t<sub>i</sub>  
 Very much less there both in-love with and proud

op]]]] was Jan geweest!  
 of had John been  
 'Much less in love with her and proud of her was John!'

Although complex, the sentences are acceptable to my ear. The APs are conjoined by the emphatic coordinating conjunction *niet alleen ... maar ook, zowel...als*, and *hetzij...hetzij*. The entire complex coordinated AP is a complement of the degree word *zo* in (41a,b) and of the degree word *minder* in (41c,d). The well-formedness of these examples affirms the structure in (1a), in which a maximal projection (AP) appears as sister of the degree word *zo*.

Under a traditional AP-analysis the well-formedness of these sentences is unexpected, since in that case the degree word would occupy the [Spec,AP]-position and the emphatic conjunctions would conjoin two non-maximal categories (viz. A'), which is not in accordance with Neijt's generalization.

Notice also that in (41c) and (41d), an R-pronoun, which has been moved in an across-the-board fashion from within the PP-complements, is adjoined to DegP and AP respectively. So, these examples also indicate that adjunction to AP and DegP (which are both non-argument type categories) is permitted.

Another potential argument which seems to support a DegP-structure comes from *so*-pronominalization in English. As is well-known, the pronominal element *so* can replace the maximal projection VP. In the following sentence, for example, it replaces the VP *stuck his finger into his mouth*.

42 John stuck his finger into his mouth, and Peter did *so* too

The pronominal element *so* can also replace adjective phrases, as is illustrated below (example (43a) is taken from Radford (1988)):

- 43a. Many people consider John [extremely rude], but I've never found him *so*  
 b. John is [very intelligent], and Peter is *so*, too

Notice now the following examples in which the pronominal element *so* replaces the non-maximal category A'.

- 44a.\* John is [very proud of Mary] and Bill is [extremely *so*], too  
 b.\* John seems [very exhausted] and Bill seems [terribly *so*], too

The ill-formedness of these sentences suggests that *so* cannot replace the non-maximal projection A', but that it must replace the maximal projection of the adjective.

Consider next the sentences in (45) ((45a) taken from Radford (1988)) and (45b) from Quirk et al. (1972)):

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- 45a. John used to be very fond of Mary, but now he is much less *so*  
 b. Although the poor girl was exhausted, she was less *so* than we feared  
 c.? John found her very rude, but Peter found her less *so*  
 d. John was very afraid of the pope, but the archbishop of Canterbury was much less *so*

If *so* can only replace the maximal projection of an adjective, then these facts are problematic for a traditional AP-analysis in which the degree elements *less* and *more* are in [Spec,AP] and sisters of A'. Under a DegP-structure, the acceptability of the examples in (45) can be accounted for. The pronominal element *so* simply replaces the maximal projection AP, which is a complement of the degree word. So, the DegP *much less so* in (45d), for example, has the following structure.

- 46 [DegP much [Deg' [Deg less] [AP so]]]

The constituenthood of the string *much less so* is shown by the possibility of moving it into [Spec,CP] in literary style. This is illustrated in (47):

- 47 John was very afraid of the pope, but [much less so] was the archbishop of Canterbury

A last argument in favor the DegP-structure comes from the following extraction facts from Dutch:

- 48a. *Hoeveel cm te lang* denk je dat Jan -- was?  
 How-many cm too tall think you that John was  
 'How many cms too tall do you think John was?'  
 b. *Hoeveel cm* denk je dat Jan [-- *te lang*] was?  
 c.\* *Hoeveel cm te* denk je dat Jan *lang* was?

In (48a), the constituent *hoeveel cm te lang* has been moved into the [Spec,CP] of the matrix clause. In the well-formed sentence (48b), the measure phrase has been subextracted from within the 'adjective phrase' and has been moved into [Spec,CP]. The ill-formedness of (48c) shows that it is impossible to front the string *hoeveel cm te*.

Under a traditional AP-analysis, the string *hoeveel cm te lang* would be assigned a structure as in (49a). Under a DegP-analysis, it would have a structure as in (49b).

- 49a. [AP [DegP [hoeveel cm] te] [A' lang]]  
 b. [DegP [hoeveel cm] [Deg' te [AP lang]]]

The well-formedness of (48b) can be accounted for under both configurations if one adopts the assumption that adjunction to the nonargument type categories AP and DegP is permitted (see Corver (1990)). Under the traditional AP-analysis (48b) could be derived as follows: Direct removal of the measure phrase (a non-argument) out of the dominating DegP and AP is not permitted; DegP is not L-marked and hence a BC and a Barrier; AP would inherit barrierhood from DegP. So, direct removal would

yield an ECP and Subjacency violation. The barrierhood of DegP and AP can be circumvented, however, by adjoining to these maximal categories. Via intermediate adjunction to VP, the measure phrase can be moved into [Spec,CP] without violating the ECP or the Subjacency condition.

Under a DegP-analysis (see (49b)) the extractability of the measure phrase can be explained as well. Via intermediate adjunction to the dominating DegP and VP, the measure phrase can reach the [Spec,CP]-position without yielding a Subjacency or ECP violation.

Now let us turn to the relevant example (48c). It is not clear what accounts for the ill-formedness of these structures under a traditional AP-analysis. It would simply involve extraction of the entire DegP out of AP. Via intermediate adjunctions to AP and VP, the DegP can be moved into [Spec,CP].

Under a DegP-analysis, the ungrammaticality of this sentence can be easily accounted for. Extraction of the sequence "measure phrase - degree word" violates the well-known constraint that non-constituents cannot undergo movement.

This concludes my presentation of a number of arguments which seem to justify the structure in (1a). One final note should be made concerning the specifier position within AP. So far, I have not said anything about which elements might fill this position. The problem is that it is not easy to find examples of "full-fledged" DegPs in which all satellite positions are lexically filled. A possible candidate is the complex DegP in sentence (50) below:

- 50 [Iets minder [én [die kritiek; vreselijk t<sub>i</sub> beu] én  
Somewhat less both that criticism terribly sick-of and  
  
[die opmerkingen; vreselijk t<sub>j</sub> moe]], dat leek me  
that remarks terribly tired-of, that seemed to-me  
  
alleen jullie Jan!  
only your Johnny  
'It seemed to me that only John was both terribly sick of all that criticism and  
terribly tired of those remarks'

This sentence is a left dislocation construction, in which the largest string between brackets is a DegP that occupies a left peripheral position (sometimes referred to as the TOP-position) and that is followed by a demonstrative pronoun which occupies [Spec,CP]. The structure of this complex DegP is the following: The head of DegP is the degree word *minder*. Its specifier position is filled by the nominal element *iets*. The degree word has as its complement an emphatically coordinated AP. The AP-conjuncts are coordinated by the conjunctions *en .. en*. These coordinated APs are headed by adjectives which select a noun phrase (DP) as their complement. The adjective *beu* has *die kritiek* as its complement, and *moe* has *die opmerkingen* as its complement. As Van Riemsdijk (1983) has pointed out, one of the striking properties of these adjectives is that adjectival modifiers generally appear closer to the adjectival head than the DP-complement in this type of APs. This suggests that the DP-complement is moved from its D-structure position (i.e. sister to A<sup>0</sup>), where it is assigned a theta-role, to a position peripheral to the adjectival modifiers. Notice further that the moved complements occupy a position to the right of the degree word heading the complex Degree Phrase, which suggests that they are located inside

the AP-conjuncts. A possible landing position which comes to mind here is the [Spec,AP]-position.<sup>7</sup>

### Notes

1 There is a small class of adjectives which only permits right branch PP-complements:

- (i) a. ...dat Jan [dol op kersen]/\*[op kersen dol] is  
       ...that John fond of cherries/\*of cherries fond is
- b. ...dat Jan [gek op kinderen]/\*[op kinderen gek] is  
       ...that John crazy about children/ \*about children crazy is

I will assume that it specified in the lexical entry of these adjectives that they can only take PP-complements to their right (cf. also Hoekstra (1984)).

2 In certain environments the PP-complement must occur to the left of the adjectival head, namely if the AP occurs as an attributive modifier inside NP:

- (i) a. [een [[op Marie] verliefde] jongen]  
       a with-Mary in-love boy
- b.\* [een [verliefde [op Marie]] jongen]

The ill-formedness of (ib) may be accounted for in terms of the Head Final Filter as proposed by Williams (1982).

3 A question that is raised is: Why do verbs but not adjectives assign their theta-roles uni-directionally. It could be that the bi-directional theta assignment property of adjectives is related to their [+N,+V] status. It is imaginable that adjectives, being both nominal and verbal in a way, have the theta-assignment properties of verbs and nouns. As we have seen, Dutch verbs always assign their theta-role to the left, while nouns assign their theta-role to the right. In English, adjectives always assigns their theta-role to the right, just like nouns and verbs. Another possibility would be to say that adjectives are unspecified for theta-role assignment and therefore permit PP-complements to occur on both sides at D-structure.

4 Notice that AP is not L-marked by Deg<sup>0</sup>, since Deg<sup>0</sup> is not a lexical category. Hence, one would expect movement of A<sup>0</sup> to Deg<sup>0</sup> to produce an ECP-violation, since AP should be an L-barrier to antecedent government. One could propose, however, that after A<sup>0</sup>-raising the newly formed element is lexical and can L-mark the AP (cf. also Chomsky (1986) for a similar discussion of the V to I raising operation).

5 I will leave open here whether the licensing of this empty complementizer should be considered an instance of proper government by a theta-assigning category (see Stowell (1981)). The data suggest that at least some connection between the empty COMP and a head is required.

6 Notice that even if the CP remains within the adjective phrase the sentence is out:

- (i) a. [As afraid as Bill that they would kill him] John certainly was!  
 b.\*? [As afraid t<sub>j</sub> as Bill [CP - they would kill him]<sub>j</sub>] John certainly was!

In the b-sentence, the CP, which originates as a complement of A<sup>0</sup>, occurs in a position adjoined to DegP. Since it is no longer within the government domain of the head by which it is selected after extraposition, the complementizer cannot be empty.

- 7 Under the assumption that adjunction to AP is permitted, an alternative landing site would be a position adjoined to AP. It is not easy to find evidence in favor of one or the other analysis.

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