

The Final-over-Final Constraint and the Head-Final Filter

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Abstract

This chapter examines a restriction on the distribution of adjectives which is highly reminiscent of the Final-over-Final Constraint (FOFC) but does not obviously fall within its remit (at least as it is formulated in chapter 1). The relevant asymmetry, which was first noted as Greenberg's (1963) 'Universal 21' and later extended as Emonds' (1976) 'Surface Recursion Restriction' and Williams' (1983) 'Head-Final Filter', bans anything from intervening between a prenominal modifier and the phrase which it modifies. The most famous examples typically involve prenominal adjectival phrases containing complements (e.g. **a [proud of his son] man*), though the effect is actually more general. As others have noted previously, however, this effect, though pervasive, is apparently not universal, with some languages appearing to allow right-branching prenominal adjectival phrases to varying degrees (cf. Cinque 2010 for recent discussion). It is argued, nonetheless, that the 'Head-Final Filter' should fall within the remit of FOFC, as apparent violations plausibly involve considerable hidden structure (which is sometimes visible in the case of Bulgarian and Macedonian). It is further argued that Sheehan's (2012, to appear, chapter x) account of FOFC can accommodate the HFF as long as certain independently motivated assumptions are made about adjectival modification.

1 Introduction

Biberauer, Holmberg & Roberts (2007) note the apparent similarity between the Final-over-Final Constraint (FOFC), which bans a right-branching phrase as the complement of a left-branching phrase (in certain contexts, cf. chapter 1) and the ban on right-branching prenominal modifiers in English (with the example, but not the structure from Abney 1987: 326):

- (1) *Basic FOFC*: $*[\gamma_P [\alpha_P \alpha \beta] \gamma]$
(2) **John is a* $[\gamma_P [\alpha_P \text{proud of his son}] \text{man}]$.

Despite superficial similarities, however, there are important structural differences between the two gaps, under standard assumptions, which make a reduction of (2) to (1) far from straightforward. BHR's account of FOFC, outlined in chapter X bans (1) only where α_P is the complement of γ . While it is fair to say that there is no general consensus as to the structural status of (the various kinds of) adjectives (Adjs), with many different possibilities being entertained in the literature, certain possibilities can nonetheless be ruled out quite uncontroversially. As is well known, the argument/adjunct distinction is far from clear-cut, both empirically and theoretically, but there nonetheless seem to be strong reasons to reject the idea that adjectival phrases are complements of N.^{1,2}

In introductory textbooks, it is often asserted that complements are obligatory whereas adjuncts are optional: Adjs are clearly not complements in this sense as they are never obligatory in DPs. There are well-known challenges to this generalisation in both directions, though, making the diagnostic potentially problematic.³ Another well-known diagnostic concerns iteration, the claim being that adjuncts unlike

¹ Interestingly, the opposite possibility, that N is the complement of Adj has been pursued, notably by Abney (1987). I return to this proposal and the problems it faces in section 4.1, but note immediately that under Abney's proposal, (2) is *not* a FOFC effect, but rather a direct consequence of the fact that Adj can take only one complement (cf. Svenonius 1994 and section 4.1 for a critical discussion).

² This is not to say that AdjPs have not been analysed as complements. Under Kayne's (1994) influential analysis of relative clauses, certain kinds of intersective adjectival modifiers (reduced and full relatives) are taken to be complements of D. In section 4.4, I argue that this analysis serves to make the HFF a FOFC effect under Sheehan's PF approach.

³ Compare adjectives functioning as secondary predications which *are* obligatory in certain contexts:

complements can be iterative. While there are restrictions on AdjPs containing complements in English, it is possible for two to co-occur, especially if one of them is spelled out discontinuously (cf. section 2.4.2):

- (3) I know a customer annoyed with the service ??(and) aware of his rights.
- (4) I know a younger man than John allergic to peanuts.⁴

Thus (3), where both the AdjPs are postposed, is rather awkward without the co-ordination marker, but (4) is fully grammatical, where *younger than John* requires extraposition because of the HFF (cf. Grosu, Horvath & Trugman 2007 and the discussion in section 2.2). Note that (3) also improves if one of the adjectival modifiers is embedded in a full relative clause, suggesting that (3) may be marginal for processing reasons:

- (5) I know a customer annoyed with the service who is aware of his rights.

Other syntactic tests distinguishing adjuncts from complements also suggest that these AdjPs are adjuncts. The familiar *do so* and *one* replacement tests are standardly taken to indicate whether an XP associated with VP or NP (respectively) is a complement or not. By this criterion, adjectival phrases (AdjPs) of the kind in (2) again do not pattern with complements:⁵

- (6) a. ?John may not be a good parent but he is one proud of his son.⁶
- b. *Mary may not be an historian of ideas but she is one of science.

Semantic diagnostics can also be applied with some degree of reliability. In the most basic terms, whereas adjunction often gives rise (semantically) to predicate modification, complementation gives rise to saturation via functional application. Thus a ‘red car’ is something which is both red and a car, whereas an historian of science is not something/one who is both a historian and of science.⁷ By this criterion too, then, AdjPs like ‘proud of his son’ do not pattern with complements of N (a man proud of his son is someone who is both a man and proud of his son). For this reason, while the syntax of adjunction remains a highly complex issue to which I return at length below, it is fairly uncontroversial that example (2) does not straightforwardly fall under FOFC as the constraint is stated in chapter 1.

The remainder of this chapter considers the cross-linguistic validity of the HFF and whether it might be subsumed under some analysis of FOFC, given current analyses of adjectival modification. Section 2 considers the evidence in favour of the effect as discussed by Greenberg, Emonds, Williams and many others. Section 3 addresses the apparent counterexamples to the effect from a number of Slavic and Baltic languages. Section 4 raises some problems with previous accounts of the gap and argues that the HFF falls under FOFC if one adopts the analysis put forth by Sheehan (2012, chapter X), if certain independently motivated assumptions are made. Finally, section 5 concludes and raises some questions for future consideration, notably the behaviour of adverbial phrases.

(i) John sneezed himself *(better).

⁴ In section 2.2 I give arguments from the literature that *than*-CPs are the complements of the Degree head.

⁵ But cf. Sheehan (2010), citing Schütze (1995), for some complications regarding the *one*-replacement test as a test for complementhood.

⁶ *Proud* is not actually the best adjective in these constructions despite its ubiquitous use to illustrate the HFF. Unlike other adjectives it is not very good as a postnominal restrictive modifier:

- (i) ?The man proud of this son asked for him to be promoted.
- (ii) The man annoyed with the service asked for a refund.

This is possibly because modifiers in this post-nominal position have a restrictive reading (without comma intonation) and there is a general assumption that all men are proud of their sons. Other adjectival phrases, which do not suffer from this drawback are less awkward with *one*-replacement:

- (iii) Mary saw a customer pleased with his meal as well as one annoyed at the delay.

⁷ While this diagnostic seems to be a sufficient condition for adjuncthood, it is clearly not a necessary condition, given the existence of non-intersective adjectives such as *former*, to which I return in section 4.3.

2 Evidence for the Head-Final Filter

2.1 Greenberg's Universal 21

Greenberg (1963: 70) notes that of the four possible combinations of AdjP and N, (7d) alone is unattested in his representative sample of languages:

- (7) a. [N [Adv-Adj]]
b. [N [Adj-adv]]
c. [[Adv-Adj] N]
d. *[[Adj-Adv] N]

He further notes that while there are N-Adj languages allowing both Adj-Adv and Adv-Adj orders, there are no Adj-N languages allowing both orders of Adv and Adj. This asymmetry is given as his Universal 21:

- (8) Universal 21 (Greenberg 1963: 70)
If some or all adverbs follow the adjective they modify, then the language is one in which the qualifying adjective follows the noun and the verb precedes the object as its dominant order.

As is well known, English fairly uncontroversially adheres to this universal, disallowing the order Adj-Adv in prenominal position (cf. Sadler and Arnold 1994: 187, 190):

- (9) a. *a [dressed in blue] man
b. *the [navigable by boat] rivers
c. *a [running smoothly] meeting
d. *a [long for such a late hour] journey
e. *a [skilful for a novice] surgeon

The fact that the effect holds also in languages with variable word orders makes it reminiscent of FOFC (cf. chapter x). An important difference between Universal 21 and FOFC is that the latter, as stated in chapter 1 is only sensitive to complementation, whereas Universal 21 concerns the placement of adverbials. It is argued in chapter X, however, that FOFC effects are also observed adverbials, so that V-Aux sequences cannot generally be interrupted by either arguments or adjuncts.

2.2 William's Head Final Filter

Williams (1982: 161) observes that the restriction on prenominal modification is also more general than Greenberg noted and claims that it equates to "a constraint barring post-head material in prenominal modifiers" (his 'Head-Final Filter' - HFF). As such post-adjectival adverbial modifiers are banned as in (9), but so too are complements, as in the following examples:

- (10) a. *A bored of French student
b. *A sick of waiting patient
c. *An afraid of his contemporaries writer
d. *a sporting a mackintosh man
e. *an in the corner chair⁸

Note that in (10e), the prenominal modifier is a PP rather than an AdjP, suggesting that the restriction is also not category-sensitive. Beyond examples (9) and (10), however, there is some controversy as to which other word order effects fall within the remit of the HFF. Grosu & Horvath (2006), for example,

⁸ A plausibly related phenomenon is the class of adjectives which derive historically from prepositional phrases: *asleep*, *aslant*, *ajar*, *atilt*, and cannot surface pronominally. Larson and Marušič (2004: 270, fn 2) propose that *a-* is still a head in such examples, meaning they have the same status as (10e).

argue at length that the obligatory extraposition seen with comparatives and degree modifiers is directly attributable to the HFF:

- (11) a. *John is [more than Bill (is)] tall.
b. *John is [more than he is fit] tall.

- (12) a. *John is [too to be honest] kind.
b. *John is [as as Mary] smart.

Grosu, Horvath & Trugman (2007: 13) further claim that the ban on right-hand modifiers inside comparative DPs also has the same explanation:

- (13) a. *John is a [more intelligent than Bill] man.
b. *John is a [more unusually than any of you] dressed student.

For this to be the case, the underlying structure of comparatives and degree modifiers must be basically as follows, as they note:

- (14) a. [AdjP [DegP more [CP than Bill (is tall)]] tall]]
b. [DP a [NP [AdjP [DegP more [CP than Bill (is tall)]] tall]] man]]

The HFF then forces the complement of Deg in (14a) and (14b) to be extraposed.

There are several reasons to favour this explanation of extraposition in comparatives and degree modifiers over the semantic explanation in Bhatt & Pancheva 2004. Firstly, note that there is good evidence that the CP in such structures forms a constituent with the Degree head at some level of representation, in fact, even Bhatt & Pancheva argue at length for this claim, though they argue that it is late-merged in this position.⁹ The main evidence that CP is the complement of Deg comes from the fact that there are selectional restrictions between degree head and CP-type (as Bresnan 1973 noted).¹⁰ Secondly, as Grosu, Horvath & Trugman (2007) note, and as I discuss in section 3, Russian allows superficial violations of the HFF with both comparatives and AdjPs, making a semantic explanation suspect.¹¹ Moreover, as Grosu, Horvath & Trugman (2007) also note, other languages employ the same kinds of compliance strategies in both contexts. Thus Hungarian, which is also subject to the HFF permits the complements/modifiers of both attributive adjectives and comparatives to be fronted rather than extraposed:¹²

- (15) Mari [Jánosnál] kevésbé magas [Hungarian, Grosu, Horvath & Trugman (2007: 22)]
Mary John-at less tall
'Mary is less tall than John.'

Finally, Grosu, Horvath & Trugman (2007) point out a more general problem with Bhatt and Pancheva's semantic trigger for extraposition (via late merger). According to Bhatt and Pancheva (2004: 39), it is the fact that *-er* is *non-conservative* which forces late merger of its complement, once it has undergone rightwards quantifier raising (in the manner proposed by Fox and Nissenbaum 1999).¹³ The problem is that many degree modifiers which also require obligatory extraposition are *conservative*,

⁹ This is not universally accepted, though. See Abney 1987, Kennedy 1999 for analyses which claim that the CP and Deg head do not form a constituent.

¹⁰ Thus *as* requires an *as*-clause, *too* requires a non-finite clause, whereas *-er* requires a *than*-clause.

¹¹ Note, however, that Romanian displays a mixed behavior, allowing violations of the HFF only in comparatives, as they also note. Grosu & Horvath (2006) propose that atomization is possible in such contexts, but this is little more than a description of the facts.

¹² I return to other compliance strategies in section 2.4.

¹³ There are problems, also, with the postulation of rightwards quantifier raising (cf. Sheehan 2010 for discussion and an alternative analysis of extraposition).

meaning that the late-merge analysis “misses what seems to be a significant generalization” (Grosu, Horvath & Trugman (2007: 14). It is, thus, reasonable to assume that the word order in comparatives can be attributed to the HFF.

The pattern with degree modification more generally is more complex as all degree modifiers except those containing *enough* surface in a left-peripheral position in English. In all cases, though, complements are obligatorily extraposed, presumably because of the HFF:

- (16) a. *John is [_{DP}[as smart as Pete] a guy]
 b. John is as smart a guy as Pete.
- (17) a. *John is [_{DP} [too smart to argue with] a guy]
 b. John is too smart a guy to argue with
- (18) a. *John is [_{DP} a [tall enough to play basketball] guy].
 b. John is a tall enough guy to play basketball.

Finally, consider the behaviour of tough-adjectives and other adjectives selecting a clausal complement, which are also subject to the HFF:¹⁴

- (19) a. *a difficult for anyone to read book
 b. *an easy to persuade someone to read book
- (20) a. *A pretty for anyone to look at flower
 b. *An unlikely to choose film
 c. *A willing to help out receptionist

The ungrammatical examples in (19), named ‘tough-nuts’ by Berman (1974), are evidence for the HFF under the assumption that they share a basic structure with clausal tough-constructions. Hicks (2009) argues for the following structure for clausal tough-constructions whereby the non-thematic subject of a tough-construction is base generated inside the null operator as the object of the most embedded verb. Once this operator has moved to the edge of CP, the DP then becomes visible for raising to the matrix subject position, as per the following slightly simplified structure:

- (21) [[This book]_k is [_{AdjP} difficult [_{CP} [_{DP} Op t_k] C [_{TP} PRO to read t_j]]]]

If the tough-nut structure is parallel then in instances of indirect adjectival modification, the DP contained in the null operator would raise to spec CP, as per Kayne (1994), with the reduced relative clause then free to front or remain in situ:

- (22) a. [_{CP} [books]_k C [_{AdjP} difficult [_{CP} [_{DP} Op t_k] C [_{TP} PRO to read t_j]]]]
 b. [_{DP} D [_{FP} [_{AdjP} difficult [_{CP} [_{DP} Op t_k] C [_{TP} PRO to read t_j]]]]_m F [_{CP} [books]_k C t_m]]]

Crucially, where AdjP moves to a preverbal position, the fact that its CP complement is obligatorily extraposed would thus be a further effect of the HFF.^{15, 16}

¹⁴ Interestingly, tough-adjectives do permit apparent surface violations of the HFF in restricted contexts, a point to which I return in section 3.1:

- (i) a. An easy-to-understand book;
 b. A hard to refute argument;
 c. Some difficult-to-reach places.

Moreover, there appear to be several classes of adjectives with distinct word order possibilities (cf. O’Flynn 2008, 2009 for a lengthy description). I put these additional complications to one side for reason of space.

There is thus considerable evidence that the HFF applies to several different kinds of prenominal modifiers in English (AdjPs, PPs, DegPs). In the following section I consider the status of the HFF in other languages, leaving some apparent counterexamples from English until section 3.

2.3 Cross-linguistic patterns

The HFF has been observed to hold in (at least) German, Dutch, Swedish, Finnish, Hungarian, French, Spanish, Portuguese, Italian, Romanian¹⁷, Czech, Slovak, Sorbian, Serbo-Croatian, Slovene and Persian (cf. Abney 1987, Sadler and Arnold 1994 on English; Williams 1982, Haider 2004 on German; Zwart 1996, Hoekstra 1999 on Dutch; Platzack 1982, Delsing 1992 on Scandinavian; Grosu & Horvath 2006 on Hungarian; Bouchard 1998, 2002, Abeillé & Godard 2000 on French; Luján 1973 on Spanish; Giorgi 1988, González Escribano 2004: 1, fn 2 on Italian; Grosu & Horvath 2006 on Romanian; Siewierska & Uhlířová (2000) on Slavic; and Cinque 2010: 44-49 for a brief overview). In all such languages, prenominal adjectives cannot be followed by a complement CP/PP:¹⁸

- | | | | | |
|------|--|--|-----------------------------|--|
| (23) | de
the
intended ‘the man proud of his wife’ | [
[
trotse (*op zijn vrouw)]
proud (*of his wife)] | man
man | [Dutch, Zwart 1996: 85, fn 3] |
| (24) | ein
an
intended ‘a syntactician unsatisfied with it’ | [
[
unzufriedener (*damit)]
unsatisfied (*it-with) | Syntaktiker
syntactician | [German, Haider 2004:783] |
| (25) | une
a
intended ‘a victory easy to win’ | [
[
facile (*à remporter)
easy to win | victoire
victory | [French, Abeillé & Godard (2000: 344)] |
| (26) | uma
a
intended ‘a student good at maths’ | [
[
boa (*a matemática)]
good at maths | aluna
student | [Portuguese] |

¹⁵ Actually, as Fleisher (2008) notes, citing Berman (1974), there are some surprising differences between tough-constructions and tough-nuts, notably regarding the thematic status of overt for-arguments:

- (i) a. This is a tough building for there to be a riot in.
b. July is an unusual month for it to snow (in).
c. *This building is tough for there to be a riot in.
d. *July is unusual for it to snow (in).

This means that whereas for-arguments are selected by the tough-adjective in tough-constructions, they are contained in CP in tough-nuts. In other respects, though, tough nuts share many properties with tough constructions.

¹⁶ Fleisher (2011) also discusses a superficially similar construction, which he calls the nominal attributive-with-infinitive construction (nominal AIC):

- (i) a. Middlemarch is a long book to assign.
b. Bob is a short guy for the Lakers to draft.

On the surface, this might be taken to be a further example of the HFF in action. He argues at length, however, that this construction has a wholly distinct structure, resulting from a non-finite relative clause. Whereas only a limited class of adjectives can surface in tough-nut constructions (the same which can surface in clausal tough-constructions), many more adjectives can participate in nominal AICs. There are thus no paraphrases of (i. a):

- (ii) a. *It is long to assign Middlemarch.
b. *Middlemarch is long to assign.

Fleisher (2011) argues convincingly that the CP in nominal AICs is a non-finite relative clause rather than a complement of the adjective. This accounts for the fact that not all adjectives participating in this construction can select a clausal complement as well as the fact that nominal AICs can only surface in predicative positions, like other nominal bearing non-finite relatives.

¹⁷ Romanian appears to permit violations of the HFF in comparative constructions, for unclear reasons.

¹⁸ In actual fact, as I discuss in section 3, Serbo-Croatian and Slovene are subject to the constraint in a weaker form.

- (27) O [interesantă (*pentru noi toți)] propunere
 an interesting for us all proposal
 intended ‘an interesting proposal for us all’ [Romanian, based on Grosu & Horvath (2006: 28)]

Although comparative DPs are not generally discussed in relation to the HFF, at least Dutch, Spanish, French, Portuguese and Hungarian show the same restriction in this domain too. The effect is therefore a pervasive if not universal property of natural language, whatever its explanation.

Note that this ban applies even in languages which only allow restricted classes of prenominal adjectives, where its salience as a constraint must be less manifest, making it more difficult to acquire. In Persian, adjectives usually follow the noun, which bears ezafe marking.¹⁹ One exception to this comes from superlatives which precede the noun and do not require ezafe (Samiian 1994):

- (28) kûechek-tarin mive
 small-est fruit

Interestingly, in such contexts, Persian also disallows a complement to occur between the prenominal superlative adjective and the noun:

- (29) *[vafadar-tarin be shohar-am] zan [Persian]²⁰
 loyal-ist to husband-my woman

As such, there is suggestive evidence that the ban results from a synchronically active constraint, rather than an historical idiosyncrasy, as it holds even in hidden pockets of some languages. It has also been noted, however that a small number of Slavic/Balkan languages appear to permit violations of the HFF. I consider these languages in some detail in section 3. Before this, though, I examine the compliance strategies employed in connection to the constraint.

2.4 Compliance strategies

Another feature which the HFF shares with FOFC is that languages appear to use different repair or compliance strategies to avoid violations.

2.4.1 Preposing

In German, Dutch, Scandinavian, Finnish, Hungarian, Czech, Slovak, Sorbian, Serbo-Croatian and Slovene, it is possible to prepose a PP complement/modifier of Adj to a preadjectival position (cf. Haider 2004 on German; Zwart 1996, Hoekstra 1999 on Dutch; Platzack 1982, Delsing 1992 on Scandinavian; Grosu & Horvath 2006 on Hungarian; Siewierska & Uhlířová 2000 on Slavic):

- (30) een op Marie verliefde jongen [Dutch, Hoekstra (1999: 180)]
 an of Marie in.love boy
 ‘A boy in love with Marie’

- (31) ett sedan i går välkänt faktum [Swedish, Delsing (1992:25)]
 a since yesterday well.known fact
 ‘a fact well-known since yesterday’

- (32) na svého syna pyšný muž [Czech, Siewierska & Uhlířová (2000: 135)]
 of his son proud man

- (33) A fizetésükkel elégedetlen munkások nem dolgoznak jól.
 the salary.their.with dissatisfied workers.NOM not work.3PL well

¹⁹ This is usually taken to be an instance of ‘indirect modification’ of the kind discussed above.

²⁰ Thanks to Yalda Kazemi Najafabadi for all Persian judgments.

'Workers dissatisfied with their pay don't work well.'

[Hungarian, Grosu & Horvath (2006: 21)]

This strategy is also marginally available in Macedonian, a language which has been claimed not to be subject to the HFF:

- (34) ?momche zavisno od svoite roditeli [Macedonian]²¹
 boy dependent on his parents

Interestingly, the languages I have been able to test (English, Serbo-Croatian, Slovene and Swedish,) do not readily permit this compliance strategy with CP complements of Adj.²² It is at the very least much more marked than with PPs, and is judged ungrammatical in Swedish and Slovene:²³

- (35) *da je vojna zavesten otrok [Slovene]
 that is.3SG war.F aware.M child.M
 'A child aware that there is a war'

- (36) *(?)da je rat svijestno dijete [Serbo-Croatian]
 that is.3SG war.M aware.N child.N
 'A child aware that there is a war'

Hungarian allows the same preposing strategy with phrasal comparatives. In predicative position, the PP complement of a comparative can either follow or precede Deg, but when DegP is preposed, it must precede it:

- (37) a. Mari kevésbé magas [Jánosnál]. [Hungarian, Grosu & Horvath 2006: 479]
 Mary less tall John-at
 b. Mari [Jánosnál] kevésbé magas
 Mary John-at less tall
 'Mary is less tall than John.'

- (38) a. *Egy kevésbé magas [Jánosnál] lány lépett be.
 a less tall John.at girl stepped in
 b. Egy [Jánosnál] kevésbé magas lány lépett be.
 a John.at less tall girl stepped in
 'A girl less tall than John walked in.' [Hungarian, Grosu & Horvath 2006: 479]

If there is a universal ban on preposing CPs, then this lends support to Wunderlich's (2001) claim that these are truly phrasal, rather than covert clausal comparatives. In fact, the ban on CP fronting might plausibly reduce to a FOFC effect, as head-initial CP complements, unlike prepositional complements, are generally banned from appearing in a pre-head position (cf. chapter XXX). The reason why PPs remain immune to FOFC in Germanic and Slavic remains opaque, but cf. chapter XX for one possibility.

This compliance strategy again makes the HFF appear similar to FOFC, as preposing the PP complement/modifier in such cases removes the offending right-branching structure. Interestingly, this compliance strategy coexists with alternative strategies in the languages in question, as discussed in the following sections.

²¹ Thanks to Nino Nikolovski for the Macedonian judgments.

²² This is difficult to test in Dutch and German for independent reasons.

²³ Thanks to Moreno Mitrović (Slovenian and Serbo-Croatian) and Boban Arsenijević (Serbo-Croatian) for judgments.

- Extrapolation of PP complements is not generally possible:

- (43) a. *A proud man of his son
 b. *An angry teacher with her student
 c. *A satisfied customer with the service
 d. *a capable man of murder
 e. *a dependent youth on his parents
 f. *a familiar teacher with our problem²⁴

Adjunct extraposition from AdjP, however, *is* permitted, again as long as the adjective in question is individual-level:

- (44) a. A long journey for such a short distance
 b. A skilful surgeon for a novice
 c. A fat man around the waist
 d. A lucky woman in matters of love
 e. A popular guy with girls
 f. A respected woman in her field (examples c-f, González Escribano 2005: 568)

- (45) a. *a blue man in the face
 b. *a due payment in thirty days
 c. *a restless child in her seat
 d. *a suffering patient from early childhood
 e. *a tired woman in the evenings
 f. *a yellow book with age (González Escribano 2005: 567-570)

The same pattern holds in Dutch, Swedish and German.²⁵

In the case of DegP, CP/PP extraposition is much less constrained. Thus CP extraposition appears to be fully productive in comparative and degree modifier constructions:

- (46) a. A bigger problem [_{CP} than Op we had first anticipated]
 b. A bigger fool [_{CP} than Op John (...)]
 c. too smart a guy [_{CP} to argue with]
 e. a tall enough guy [_{CP} to play basketball]

- (47) Een meer intelligente student dan Wim [Dutch, Hoekstra (1999: 180)]
 A more intelligent student than Wim
 'a more intelligent student than Wim'

The same is true in English, German and Swedish, but not Dutch, with what González Escribano calls symmetrical or comparative modifiers of the following kind:

- (48) a. an alternative view to Chomsky's

²⁴ González Escribano also discusses certain marginal cases where it is unclear if the PPs in question are complements or adjuncts:

- (i) a. ?a foolish man about money matters
 b. ?a fussy man about wine
 c. ?an invisible process to the naked eye
 d. ?a kind man to strangers
 e. ?a loyal soldier to his Queen
 f. ?a particular man about food

(González Escribano 2005:PP)

He posits a processing explanation for the virtual acceptability of such examples, whereby the PPs in question are analysed online as complements of N rather than A.

²⁵ Thanks to Anders Holmberg (Swedish), Jenneke van der Wal (Dutch) and Ulrich Reichard (German) for help with the data. Note that this strategy is slightly marked in German.

- b. an analogous hypothesis to Abney's
- c. a comparable situation to ours
- d. a different view from yours
- e. an equivalent idea to that
- f. a parallel theory to Frege's
- g. a separate room from ours
- h. a similar car to mine

I assume that these modifiers are also degree modifiers, hence their incompatibility with comparative or equative morphemes:

- (49) a. *as comparable a situation as ours
 b. *a more different view from yours

Note also, that inherently comparative modifiers can also surface with a *than*-CP complement, and with an overt *wh*-phrase (in non-standard dialects), both properties they share with comparative constructions:

- (50) A different one than (what) I'm used to

As such, these examples do not present counterexamples to the ban on PP complement extraosition from AdjP.

2.4.3 Wholesale extraposition of AdjP

Finally, it is crucial to note that in all the languages tested (English, German, Swedish, Dutch, Slovene, Serbo-Croatian, Polish, Macedonian, Portuguese and French), in all HFF contexts, right-branching modifiers can simply be postposed wholesale to a post-nominal position. In languages which lack the other compliance strategies this is the only option available, as, for example, in Spanish, Portuguese and French, as it is with PP complements/modifiers of stage-level AdjPs in English. In the other Germanic and Slavic languages, this strategy coexists with the other available strategies:

- (51) Une victoire [facile à remporter] [French, Abeillé and Godard (2000: 339)]
 A victory easy to win
 'An easy victory to win'

- (52) uma aluna [boa (*a matemática)] [Portuguese]²⁶
 a student good at maths
 intended 'a student good at maths'

- (53) a. A student bored of French
 b. A patient sick of waiting
 c. A chair in the corner

- (54) a. a man blue in the face
 b. a payment due in thirty days
 c. a child restless in her seat

²⁶ Actually, the adjectives *boa/bom* (good) and *mau/má* (bad) also marginally allow PP extraposition of the complemente:

(i) Uma boa aluna a matemática
 A good student at maths

This is a very restricted phenomenon, however, as extraposition is not possible with the PP complements of *orgulhosa/o* (proud), *chateada/o* (annoyed), *farta/o* (tired), *satisfeita/o* (satisfied).

This compliance strategy is reminiscent to that observed with head-initial CP complements in OV languages, as discussed in chapter XXX.

Table 2.4.3: compliance strategies

	Slovene	German, Swedish, Dutch	Serbo- Croatian	Macedonian	English	Polish
Preposing	PP, *CP	PP, *CP	PP, *CP	?	*	*
PP/CP extraposition	unrestricted	restricted	* ²⁷	unrestricted	restricted	*
Wholesale extraposition	unrestricted	unrestricted	unrestricted	unrestricted	unrestricted	unrestricted

The data in table 2.4.3 show that all languages permit wholesale extraposition of phrasal modifiers. In addition to this compliance strategy, languages differ with respects to which they employ two additional strategies.

2.5 Summary

The data discussed above along with the three compliance strategies observed in section 2.4 strongly suggest that the restriction on pre-nominal modifiers is sensitive to word order.²⁸ This much is also obvious from Greenberg's observation that left-branching prenominal modifiers are readily acceptable in the same languages which block right-branching prenominal modifiers:²⁹

- (55) a. An [only recently posted] letter
b. A [most extremely loyal] husband
c. *A [running smoothly] meeting

As expected, this means that more strongly head-final languages are not subject to the effect. Kornfilt (1997: 96) shows that the following are well-formed in Turkish:³⁰

- (56) [Ben-im kadar yorgun] bir insan
I-GEN as.much.as tired a person
'A person as tired as me'

- (57) [Koca-sın -a çok sadık] bir kadın
Husband-GEN DAT very loyal a woman
'A woman loyal to her husband'

In Japanese, likewise, left-branching prenominal modifiers are fully acceptable, and indeed are the only available option.³¹

²⁷ There was disagreement between speakers as to the acceptability of CP/PP extraposition. One speaker (bilingual in Slovene) found all examples fully acceptable, whereas the other found all ungrammatical or highly marked.

²⁸ This is a fatal flaw for Abney's (1987) account of the constraint, as discussed in section 4.1.

²⁹ Abeillé and Godard note also that certain Adv-Adj modifiers are also blocked in the preverbal position in French:

(i) *Une politiquement importante décision
'A politically important decision'

As such, there must be additional constraints on adjectival modification in French.

³⁰ Note that in Turkish all adjectival modifiers of NP precede the indefinite article (cf. Tat 2010 for an account of this based on Kayne 1994).

- (58) chocolate daisuki josei [Japanese]³²
 chocolate love woman
 ‘a woman fond of chocolate’

- (59) kuroi fuku o kiteiru josei [Japanese]
 black clothes ACC wearing woman
 ‘A black clothes wearing woman’

Thus far, the data from a range of Indo-European languages, Finnish and Hungarian reveal the HFF to be more than a language-specific idiosyncrasy. The question remains open, though, whether the latter is a universal fact about language. The existence of apparent counterexamples to the effect in English as well as certain Balkan/Slavic languages might appear to suggest it is not. I argue in the following section, however, that these often only marginally acceptable counterexamples do not serve to undermine the potential universality of the constraint, as there is independent evidence that prenominal modifiers involve considerable hidden structure at least in some of these languages.

3 Apparent counterexamples to the HFF

3.1 English counterexamples

Although the effect of the HFF is pervasive, it is not, apparently, absolute. Even in English, for example, ‘tough-adjectives’ with non-finite clausal complements can often surface in the preverbal position (corpora examples from Cheong Leung & Van der Wurff 2012):

- (60) a. An easy-to-understand book;
 b. A hard to refute argument;
 c. Some difficult-to-reach places.

The usual explanation for these kinds of counterexamples is to take the AdjPs in question to be ‘complex lexical items’ or ‘atomic units’, hence the tendency for hyphenation (cf. Nanni 1980: 574, citing Roeper and Siegel 1976). This is arguably the case also with other apparently right-branching prenominal modifiers, which certainly have a lexical ‘frozen’ flavour and are also often written with hyphenation:

- (61) a. His holier-than-thou attitude
 b. The Final-over-Final Constraint
 c. His down-to-earth demeanour

Note that this is also possible in some restricted cases with comparatives, and as O’Flynn (2008, 2009) notes, a small group of adjectives which cannot appear in tough-constructions:

³¹ In fact, as Larson & Takahashi (2007) show, prenominal relative clauses in head-final languages behave unlike post-nominal relative clauses and like prenominal AdjPs in requiring a strict ordering, with direct (individual-level) modifiers occurring closer to N than indirect (stage-level) modifiers:

- (i) a. [Watashi-ga kinoo atta] [tabako-o suu] hito-wa Tanaka-san desu.
 [1SG-NOM yesterday met][tobacco-ACC inhale] person-TOP Tanaka.-COP
 ‘The person who smokes who I met yesterday is Miss Tanaka.’
 b. ?*[Tabako-o suu][watashi-ga kinoo atta] hito-wa Tanaka-san desu.
 (ii) a. The invisible visible stars (stage level > individual level)
 b. #The visible invisible stars (individual level > stage level)
 c. The stars which are visible which are invisible.
 d. (?)The stars which are invisible which are visible.

In English, the strict ordering between stage-level and individual-level modifiers does not apply to post-nominal relative clauses. This follows if Japanese can RCs occupy the specifier positions of dedicated functional projections in the extended nominal field. In languages with right-branching relative clauses, this will be blocked by the HFF.

³² Thanks to Makiko Mukai for the Japanese judgments.

- (62) a. Mary is a [taller than average] player
 b. There are [more than six] players in our team
 c. a ready-to-eat meal
 d. an eager-to-please boyfriend

Crucially, these structures share certain properties with compounds. For example, regular plural morphology is blocked inside complex prenominal modifiers, as Sadler and Arnold (1994: 189) note, just as it is inside compounds. In a postnominal position, however, such morphology is required:

- (63) a. more than ten mile(*s) walk
 b. a walk more than ten mile*(s) long
- (64) a. a bug(*s)-catcher
 b. a catcher of bug*(s)

Another indication that these examples are frozen lexicalised structures stems from the fact that they cannot contain adverbial modifiers, as Nanni (1980: 575) notes:

- (65) a. *an easy to quickly clean room
 b. *a hard to find in the attic manuscript
 c. *a simple to neatly sew pattern

Observe also that overt experiencers are also banned in these lexicalisations (Nanni 1980: 575), as are parasitic gaps and multiple embeddings:

- (66) a. *a difficult for anyone to read book.
 b. *a difficult to buy without reading book
 c. *an easy to persuade someone to read book

The construction is also limited in its productivity, being highly marginal with most tough-adjectives which are not on the easy-hard scale:

- (67) This is an *unpleasant/*annoying/??amusing/?fun to read book

This idiosyncratic restriction as well as the ban on internal syntactic structure are the hallmarks of a lexical phenomenon. Cheong Leung & Van der Wurff (2012) observe, moreover, that examples like those in (60) are only attested in corpora since the 1920s, suggesting that they are part of a recent trend towards heavy prenominal modification (of the kind seen in (61)). The alternative tough-nut construction discussed above is, however, attested from Old English onwards, and is fully productive (Cheong Leung & Van der Wurff 2012).³³

I therefore assume that these apparent counterexamples are atomic lexical units, which do not represent a genuine counterexample to the HFF. This will become especially obvious given the FOFC-based account put forth in section 4. Crucially, in these terms, FOFC is a constraint governing the

³³ Van Riemsdijk (2006) discusses other apparent counterexamples involving a superficially right-branching structure, but where the rightmost Adj is semantically the head of AdjP:

- (i) A close to trivial matter
 (ii) a far from trivial matter

These seem to be the adjectival equivalent of ‘measure’ nouns, which, contrary to appearances, are not the heads of the DPs in which they are contained:

- (iii) A load of people are/*is waiting outside.

They do not, therefore, represent robust counterexamples to the HFF.

relationship between hierarchical structure and linear order and so atomic units with no internal structure are immune to it.³⁴

3.2 Counterexamples from Balkan/Slavic languages

It has long been noted that a number of Balkan/Slavic appear to permit surface violations of the HFF. Cinque (2010: chapter 4) notes that there are apparent exceptions to the HFF in Russian, Bulgarian, Macedonian, Polish, Ukrainian and Greek. These languages all allow right-branching adjectival phrases to appear preminally (cf. also Babby 1975, Grosu & Horvath 2006 and Pereltsvaig 2007 on Russian, Siewierska & Uhlířová 2000 on Slavic and Lascaratou 2000 on Greek). Grosu & Horvath 2006 further note exceptions from Romanian comparatives:

- (68) a. [dovol'nyi vyborami] prezident
satisfied elections.INSTR president
'the president satisfied with the elections'
[Russian – Cinque (2010: 46), citing Bailyn (1994: 25)]
- b. [mnogo gordiyat sās svoeto dete] bašta
very proud.the with SELF.the child father
'the father very proud of his child'
[Bulgarian–Cinque (2010: 46, citing Tasseva-Kurktchieva (2005: 285)]
- c. i [perifani ja to jos tis] mitera
the proud of the son her mother
'the mother proud of her son' [Greek – Cinque (2010: 46) citing Androutsopoulou (1995: 24)]

In actual fact, it seems that Serbo-Croatian and Slovene also permit slightly marginal surface violations of the constraint, arguably more so, even than Macedonian.³⁵

There are three possible ways of dealing with such counterexamples. In the worse case scenario, they might force one to abandon the HFF as a deep property of grammar and to posit it as a fairly superficial though recurrent language-specific rule. Secondly, it might be the case that the effect is parameterised to hold only in certain languages. Finally, the HFF might still reveal a deep property of grammar with some other language-specific fact serving to give rise to apparent surface violations in some languages. The first two interpretations of the counterexamples are the most common in the literature, but I argue tentatively for the final possibility here.

3.2.1 Russian/Polish

Polish permits surface violations of the HFF, though in many contexts, such orders are slightly marginal, and wholesale extraposition is strongly preferred for the speaker I consulted:

- (69) a. ??[ubrany w czern] mezczyzna [Polish]³⁶
dressed in black man
b. mezczyzna [ubrany w czern]
man dressed in black
- (70) a. ?[starszy od Johna] przyjaciel
older than John friend
'an older friend than John'
b. przyjaciel [starszy od Johna]

³⁴ Sheehan (to appear) offers a tentative account of final particles based on atomization.

³⁵ A crucial difference between Serbo-Croatian/Slovene and Polish/Bulgarian, though, is that in the first language HFF-violating orders are always highly marginal and significantly worse than other potential orders. From a sampling perspective, note that all of the languages which apparently fail to adhere to the HFF are either Slavic or from the Balkan Sprachsbund, meaning that on a typological scale the scope of the counterexamples is quite limited (more so, it must be noted, than the languages adhering to the HFF).

³⁶ Thanks to Malgorzata Krzek for Polish judgments.

friend older than John
'a friend older than John'

In Polish, non-branching non-classificational adjectives must precede the noun (Rutkowski 2002, Rutkowski and Progovac 2005 on Polish). These data appear to suggest that prenominal AdjPs in Polish can be right-branching, but that this is only a marginal possibility, and, in fact, the awkwardness serves to make the postnominal position possible. In Russian, too, such word orders are stylistically marked according to Grosu, Horvath & Trugman (2007), and wholesale extraposition is preferred. It is not clear, therefore, whether Russian and Polish are any different from Serbo-Croatian and Slovene with respect to the HFF. All languages marginally permit surface violations of the constraint but the latter two have additional word orders available via preposing and CP/PP extraposition.

3.2.2 Greek

In Greek, likewise, the HFF-violating order is slightly marginal (as Grosu, Horvath & Trugman 2007 also note).³⁷ Once again, the prenominal order alternates with wholesale extraposition. However, as is more generally the case with post-nominal adjectives, this is only possible where the adjectival phrase is also marked for definiteness (cf. Androutsopoulou (1995)):

- (71) a. (?)i [perifani ja to jos tis] mitera
the proud of the son her mother
'the mother proud of her son' [Greek – Cinque (2010: 46) citing Androutsopoulou (1995: 24)]
b. i mitera *(i) [perifani ja to jos tis] [Greek]
the mother the proud of the son her
'the mother proud of her son'

As such, Greek, too, displays a weak sensitivity to the HFF, though the marginal acceptability of (71a) remains problematic.

3.2.3 Bulgarian

In Bulgarian, the order appears to be fully acceptable, though CP complements in comparatives can still surface in an extraposed position. There is reason to believe, though, that the PP complements of Adj might raise independently to a prenominal position. In Bulgarian, where an AdjP is fronted to first position, any material preceding the adjective is obligatorily pied-piped along to the pre-determiner position, whereas any material following it is not (cf. Embick & Noyer 2001, Dost & Gribanova 2006 amongst many others):

- (72) a. kupena-**ta** ot Petko kniga
bought-the by Petko book
'the book bought by Petko'
b. *kupena ot Petko-**ta** kniga
c. vernij-**at** na Vera mu
truthful-the to Vera husband
'the husband truthful to Vera'
d. *veren na Vera-**ta** mu [Bulgarian, Boskovic (2005: 31: fn 39)]

This is not a superficial second-position effect, though, as initial adverbs cannot host the definite clitic, but can precede the hosting adjective:

- (73) a. mnogo xubavi-te knigi
very nice-the books
'the very nice books'

³⁷ Thanks also to Dimitris Michelidoukakis for discussion of the Greek data.

b. *mnogo-te xubavi knigi

One way to analyse these word orders, based on Kayne's (1994) analysis of relative clauses is to posit two separate phrasal movements in such cases. The PP complement of the Adjective first vacates AdjP, possibly moving to spec CP and then AdjP remnant moves to spec DP:

(74) [_{DP} The [_{CP} [_{XP} yellow]_j C [_{IP} [book] I [_e]_j

(75) a. [_{FP} F [_{CP} [_{PP} na Vera]_i C [_{IP} [_{NP} mu] I [_{Adj} vernij t_i]]

b. [_{DP} [_{Adj} vernij t_i]_j –at [_{CP} [_{PP} na Vera]_i C [_{IP} [_{NP} mu] I t_j]]

In the case of definite DPs, this gives rise to overt discontinuity of AdjP, but where indefinites are concerned, the adjective and its complement will be string adjacent, giving the surface appearance of an HFF violation. This analysis is empirically superior to either a straight head or phrasal-movement account as well as a non-syntactic account because of the facts in (73).

Although there is no direct evidence for such an analysis in the other Slavic and Balkan languages which permit HFF-violations (with the exception of Macedonian), it might nonetheless be the case that a similar derivation applies in these cases. For this reason it seems reasonable to maintain the HFF is a universal in the belief that an independently motivated explanation for Russian, Polish and Greek will emerge, possibly also based on remnant movement. In the following section I examine and reject previous accounts of the HFF, some of which adopt a weaker parameterised stance and argue that an account in terms of the FOFC is superior.

4 The HFF as a FOFC effect

4.1 Heads vs. phrases

In an early approach to the HFF, Abney (1987) proposes an analysis whereby prenominal adjectives are heads in the extended projection of N, as mentioned in footnote 1:

(76) [_{DP} D [_{AdjP} Adj [_{NP} N]]]

Boskovic (2005) proposes that this structure is available only in languages with determiners. His basic proposal is that in such languages, the DP projection serves to make APs into arguments, whereas in languages lacking determiners no such possibility exists. As APs cannot function as arguments, it follows that, in determiner-less languages, only an NP-over-AP construction is possible (whereby the adjective is adjoined to NP). The attraction of his proposal concerns the other seemingly unrelated parametric effects which he attributes to this NP-over-AP structure, notably the possibility of left branch extraction (LBE). From such a perspective, the prediction is that determiner-less languages should *not* be subject to the HFF as, in these languages, adjectival modifiers are phrasal. Compare the structure in (76) with that in (77):

(77) [_{NP} [_{AdjP} Adj [_{PP/CP} ...]] N]

As also noted in footnote 1, Abney's account of the HFF, if correct, renders the effect wholly distinct from FOFC, despite its surface similarity. The crucial fact about (76) is that the Adjective has the NP as its complement and so can take no other complements (assuming binary branching). I will argue below, that both Abney's account of the HFF and Boskovic's parameterisation of it are empirically problematic.³⁸

While Boskovic's parametric account is highly elegant, it suffers from some obvious empirical problems. The first concerns the distribution of languages with respect to the two properties. The prediction is that (determinerless) NP-languages will not be subject to the HFF, whereas DP languages

³⁸ The debate as to the relative merits of parameterizing nominal denotation and thus the presence of D is well-rehearsed. Some conceptual problems with Abney's general approach are discussed by Svenonius (1994) and Pereltsvaig (2007).

will be. This predicts two classes of languages, when in fact all four possible combinations of the two properties are attested:

Table 4.1: The Head-Final Filter (HFF) and NP vs. DP languages

Class	Languages	NP language	Obeys the HFF
A	Russian, Polish	Y	N
B	Czech, Slovak, Sorbian, Serbo-Croatian, Slovene	Y	?
C	English, German, Dutch, Swedish, Spanish, Portuguese, Italian, French	N	Y
D	Bulgarian, Macedonian, Greek, Romanian (in comparatives)	N	N

Classes A and C on table 4.1 conform to expectations. Russian and Polish are NP languages and hence fail to adhere to the HFF, whereas English, German etc. are DP languages which obey the HFF (for Abney's reasons). Classes B and D, however, are not expected to exist. The NP/DP parameter provides no explanation as to why Bulgarian, Macedonian and Greek should fail to adhere to the HFF as they are all DP languages (as Pereltsvaig 2007 also notes). Some of these languages, might, however, be only superficial counterexamples as proposed in section 3.4. More problematic is the fact that many NP languages are apparently at least weakly sensitive to the HFF. Boskovic notes that Czech, Slovak, Sorbian, Bosnian/Croatian/Serbian and Slovene do freely permit phrasal prenominal modifiers, but with left-branching complements (cf. section 2.4.1, Cinque 2010: chapter 4, fn 9, citing Siewierska and Uhlířová 1998: 135f). The problem with this is that the same is also true of German and Swedish which are DP languages, and are thus predicted to pattern differently. In fact, the availability of preposed complements appears to be a compliance strategy for the HFF as argued above.

As Svenonius (1994) and Hankamer & Mikkelsen (2005) point out, there are also serious problems with Abney's (1987) analysis of the HFF, most notably the fact that prenominal adjectives fail to block N-to-D movement in many languages which nonetheless adhere to the HFF (cf. Longobardi 1994). Moreover, as discussed in section 2, it is not the case that prenominal adjectives must be heads bearing no complements or modifiers, merely that they cannot bear right-branching complements/modifiers (as Hankamer & Mikkelsen 2005: 96 note). In essence, Greenberg's Universal 21, which clearly notes that word order is the crucial factor here, indicates that Abney's account cannot be the whole story (cf. Also Cinque 2010: chapter 4 for further problems).

4.2 Kayne's (1994: section 8.4) discussion

Kayne (1994: 97-101) proposes the following derivation for preverbal adjective phrases, based on his raising analysis of relative clauses, drawing on a long tradition of raise prenominal adjectives from a post-verbal position (following Chomsky 1957)

(78) [_{DP} The [_{CP} [_{AdjP} yellow]_j C [_{IP} [book] I [_e]_j

In Kayne's terms, first the head noun *book* raises to spec IP to satisfy the EPP, and then the AP *yellow* raises to spec CP, giving the surface word order. The implication is that much adjectival modification involves a covert relative clause. As evidence for this derivation, he cites the fact that prenominal adjectives, like RCs and reduced RCs render it possible for a definite determiner to surface with an indefinite nominals, which otherwise rejects *the*:

(79) *The sweater of John's is beautiful.

(80) The sweater of John's that was lying on the sofa is beautiful.

(81) ?The yellow sweater of John's is beautiful.

(82) ?The recently arrived sweater of John's is beautiful.

In Kayne's terms, (79) is ungrammatical because the definite determiner *the* simply cannot select an indefinite NP such as *sweater of John's*. In (80), the presence of a relative clause attenuates this incompatibility, plausibly because in such cases D selects CP rather than NP:

(83) [The [_{CP} [_{NP} sweater of John's]_i that t_i was lying on the sofa]] is beautiful.

If (at least some) prenominal AdjPs result from covert relative clauses, then (81)-(82) can be explained in the same way.

Kayne's approach to adjectival modification offers no account of the HFF, as it stands. It does, however, offer the basis of a FOFC-based explanation. If all pre-nominal AdjPs are derived relative clauses, then the lack of head-initial pre-nominal AdjPs is also a ban on derived head-initial specifiers, making the effect look much more akin to a FOFC violation, as construed by Sheehan (2012, chapter X). There is a serious problem, though, with assuming that all prenominal modifiers are base generated as relative clauses, namely the well-known fact that not all adjectives can participate in indirect modification (i.e. function predicatively and surface in relative clauses, cf. Emonds 1976, Cinque 2010: chapter 4). I address this problem in the next section, before offering an account of the HFF in section 4.4.

4.3 Direct/indirect modification

In the discussion of adjectival phrases, a distinction is often made between 'direct' and 'indirect' modification. Cinque (2010), following Sproat and Shih (1988, 1990) and many others, makes a distinction along the following lines between the two kinds of modification:³⁹

direct (attributive) modification

- obeys the universal adjective hierarchy
- permits only a non-intersective reading

indirect (predicative) modification

- need not obey the universal adjective hierarchy
- permits only an intersective reading⁴⁰

Sproat and Shih posit this distinction to deal with the two kinds of modification observed in Mandarin, but the distinction also exists in English and many other languages.⁴¹

Cinque (2010) pursues the idea that the two readings result from distinct syntactic configurations.⁴² Direct modification involves an AdvP being externally merged as the specifier of a dedicated functional head, whereas indirect modification involves a (reduced) relative clause construction.⁴³ If the HFF reduces to a FOFC effect occasioned by movement of a head-initial modifier from a covert relative clause, it follows that only indirect modifiers should be subject to the constraint. Direct modifiers, being

³⁹ I limit my discussion to modification within DP in this chapter. The possibility remains, however, that the same contrast exists in the clausal domain, giving rise to intersective vs. non-intersective readings. Moreover, as Emonds (1976) and Haider (2004) note, some version of the HFF is also observed in the clausal domain (cf. Haegeman et al. for recent discussion). I put this matter to one side here for reasons of space (cf. also Larson 1998).

⁴⁰ There is disagreement in the literature as to whether direct modification gives rise to ambiguity or to only a non-intersective reading. This stems from the fact that many adjectives can participate in both kinds of modification. Cinque advocates the stronger position whereby there is a closer syntax/semantics mapping, and direct modification always gives rise to a non-intersective reading.

⁴¹ Not all languages have both kinds of modification, though. Cinque (2010: chapter 3) cites Slave (Athapaskan), Lango, Hixkaryana and Tiriyo as languages lacking direct modification, citing Baker (2003: 207), Noonan (1992: 103) and Dixon (2004: 28f) respectively. He also discusses Yoruba and Gbaya Mbodómó (Niger-Congo) as languages lacking indirect modification, citing Ajibóyè (2001: 6) and Boyd (1997: section 3.1.3) respectively.

⁴² Reichard (to appear) proposes that the intersective reading observed with relative clauses falls out from the phasal architecture.

⁴³ Cinque (2010) further assumes that relatives are also externally merged as specifiers, but I adopt the more conservative view that they are complements of D, as per Kayne (1994).

externally merged as specifiers, should be immune to FOFC (cf. chapter 1. X for discussion). Unfortunately, deciding which adjectives function intersectively and which do not is, however, far from straightforward. At the two extremes, it is fairly clear that *former* can only function as a subjective/direct modifier whereas *red* can only be intersective hence indirect:

- (84) a. A red door = A door which is red
b. A former colleague \neq a colleague who is former

Clearly, *former* complies with the HFF in that it cannot surface with a post-head complement/modifier. This is, however, perhaps irrelevant to the HFF, as *former* and other clear direct modifiers do not readily accept any kind of modification:⁴⁴

- (85) a. *a more former/alleged than John
b. *a very former/alleged colleague
c. *A more former/alleged colleague than John

These adjectives may, therefore, be amenable to analysis like that proposed by Abney (1987), as discussed in section 4.1, whereby they are heads in the extended nominal projection.

A crucial question, then, is whether there is any evidence of direct modifiers employing any of the compliance strategies discussed in section 2.4. Some potentially relevant examples are discussed by Cinque (2010). who attributes the two potential meanings of *old* to the direct/indirect contrast:

- (86) A friend who is old
(87) An old friend

While (86) can have only a pure intersective reading, where *old* denotes absolute age, (87) is ambiguous between this reading and another reading, whereby *old* denotes length of friendship (cf. Larson 1998, citing Siegel 1976 for discussion). According to Larson (1998), though, the distinction here does not concern intersectivity per se, but rather the variable which the adjectival phrase modifies. The noun *friend* contains an event variable which can also be intersectively modified by an adjective giving rise to the length of friendship reading in (87).

Cinque (2010) also notes that adjectives like *old* can be followed by a *than*-clause when used comparatively and that, in such contexts, the two meanings of *older* are made more explicit:

- (88) a. John is a friend older than Mary/the legal age.
b. John is an older friend than Mary/#the legal age.

In the first example, only the absolute age reading is possible, as expected if this example involves a reduced relative clause. In the second example, however, only the length of friendship reading is possible. If the length of friendship reading involves direct modification, then (88b) provides evidence that direct modification is also subject to the HFF.

It is not clear, though, that the contrast here involves direct vs. indirect modification either. Recall the following facts discussed by Bresnan (1973):

- (89) a. I know a man taller than my mother
b. #I know a taller man than my mother

⁴⁴ Cinque (2010), citing Tallerman (ref) does mention a few potential examples, but these all plausibly involve idioms or parenthesis:

(i) I feel the most utter fool
(ii) The main point in principle is that...

Given that phrasal comparatives in English are covert clausal comparatives (Lechner 1999), one way to account for the infelicity of (88b) is to posit the following elided material:

- (90) a. I know a man taller [than Op_i my mother ~~is _i ^{t_i} tall~~]
 b. #I know a taller man [than Op_i my mother ~~is a _i ^{t_i} tall man~~]

This explains why (87b) and (88b) strongly favour the readings they do, without meaning that they involve direct modification.

In sum, it seems to be the case that the HFF applies only trivially to direct modifiers, as the latter cannot generally be modified. While Abney's account of the HFF cannot be the whole story, it might nonetheless be applied to modifiers of this kind. In instances of indirect modification, however, Abney's account is insufficient as complements/modifiers are possible and languages make use of the various compliance strategies discussed in section 2.4. It is thus plausible that the HFF reduces to a restriction on the spelling out of head-initial phrases raised from a complement to a specifier position: i.e. to a FOFC effect.

4.4 Sheehan's PF account of FOFC

If all prenominal indirect modifiers result from phrasal movement from a reduced relative clause, then the HFF can be assimilated to the PF-account of FOFC, proposed by Sheehan 2012, chapter X. In this analysis, FOFC is an effect of the linearization algorithm which relies only on c-command relations between *categories* and not between *phrases*. For this reason, a difference emerges between right-branching and left branching specifiers: only the latter can be linearized. Consider the following as a simple illustration (with some categories omitted):

- (91) a. [NP [AdjP [PP PP] Adj] N [AdjP [PP ...]]]
 b. [NP [AdjP Adj [PP PP]] N [AdjP Adj [PP ...]]]

In (91a), the category Adj asymmetrically c-commands and so must precede the category N, and the atomic category PP must precede Adj, giving the unambiguous order PP>Adj>N. For this reason, preposing PP serves to avoid the HFF, as noted in section 2.4. In (91b), on the other hand, the category Adj must precede N as it asymmetrically c-commands it, and PP must follow Adj, but no order is specified between N and PP, giving rise to a linearization problem. In such cases, there are two possible compliance strategies:

- (a) complement/modifier extraposition
- (b) Wholesale extraposition

Following Sheehan (2012, chapter X), I assume that these compliance strategies are 'realtime' linearization effects, so that complement extraposition is the result of scattered deletion. In general (a) will be preferred over (b) because it involves fewer deletion operations. As discussed in section 2.4.2, however, there are certain restrictions on complement extraposition in English, Dutch, German and Swedish, which remain poorly understood at present. Where (a) is not possible, though, (b) applies, yielding a structure in which movement is effectively undone at PF.

A problem with this proposal is that wherever (a) is available in a given language, (b) is also possible (cf. section 2.4). To explain this we must assume that movement to the preverbal position is not obligatory, so that some 'wholesale extraposition' orders actually result from a lack of movement of AdjP. Under this kind of approach, the data in section 3.1. become unproblematic, as the phrasal modifiers in question have been atomised as lexical items, and so function as a single category in the derivation. Sheehan (2012), following Uriagereka (1999) argues that this is generally the case also with externally merged specifiers, hence the fact that externally merged subjects are not subject to FOFC, but are also strong islands (when they are head-initial), but is also possible with externally merged complements.

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