An Adjective Analysis

Noah A. Smith

nasmith@cs.jhu.edu

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Professor Bob Frank

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Introduction

In this discussion, I approach the structure of adjectival modifiers within the determiner phrase. Specifically, I begin with a simple structure for attributive and another for predicative constructions. I show how these structures can account for many cross-lingual phenomena, including pre- and post-nominal adjective orderings, head-final predicative constructions, NP-clitics, and, most importantly, restrictions on ordering *among* adjectives and boundedness on adjective fertility and type. My arguments are based on the Minimalist theory of [Chom98] and follow the arguments of the Linear Correspondence Axiom of [Kayn94]. I propose an extension to the theory of feature-checking, suggesting tha an element can block the Agree mechanism by virtue of its set of features alone, even if its values are in accord with those being checked.
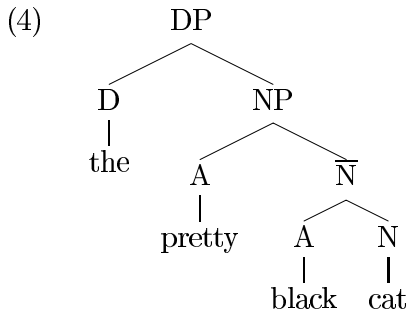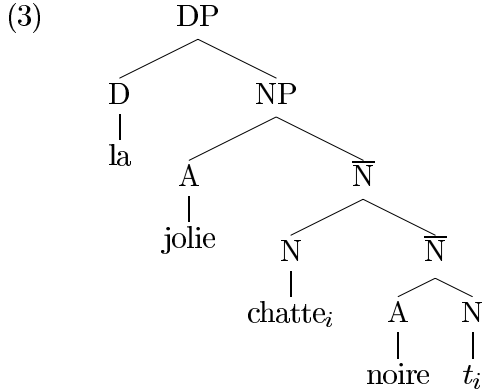
1 Structures

The majority of evidence in recent work on the structure of the noun phrase (and determiner phrase) supports a view that nouns in some languages move (leftward) within the DP [Cinq94, Bern91, Laen00]. Attributive adjectives are taken to be generated to the left of the base position of the noun. This accounts for facts about adjective ordering relative to the noun within the DP, such as the following from English and French respectively:

(1) a.   la jolie   chatte noire
           the pretty cat   black

   b. * la jolie   noire chatte
          the pretty black cat

(2) a. the pretty black cat

   b. * the pretty cat black

Note that, regardless of the position of the noun, the adjectives maintain their ordering relative to each other. I will later address instances of so-called "mirror-image" ordering.

While the N(P)-movement explanation of cross-lingual adjective distributions is not controversial, one would like for the theory to give (a.) an explanation for the driving force behind such movement, and (b.) a characterization of the underlying structure that is compatible with a Merge/Move view of syntactic derivation.

Consider first a naive approach to the structure of (1a) and (2a):

(3)

```
              DP
           ┌──┴────┐
           D        NP
           │      ┌──┴────┐
           la     A        N̄
                  │      ┌──┴────┐
                 jolie   N        N̄
                         │      ┌──┴──┐
                       chatteᵢ   A     N
                                 │     │
                               noire   tᵢ
```

(4)

```
              DP
           ┌──┴────┐
           D        NP
           │      ┌──┴────┐
          the     A        N̄
                  │      ┌──┴──┐
                pretty   A      N
                         │      │
                       black   cat
```

In light of the [Chom98] casting of movement as feature-based agreement followed by copy-and-merge (owing to some EPP feature), one might say that in the French case, 'chatte' moves owing to some EPP feature on the adjective 'noire.' This feature is not present on the prenominal adjective 'jolie,' nor is it present on the English prenominal adjectives. If in fact this is the case, 'chatte' must have moved to the Spec(AP) position, which leads to the structure:

(5)

```
              DP
           ┌──┴──────┐
           D          AP
           │      ┌────┴────┐
           la     A          AP
                  │      ┌────┴────┐
                jolie    NP         Ā
                         │      ┌───┴───┐
                      chatteᵢ   A       NP
                                │        │
                              noire      tᵢ
                               EPP
```
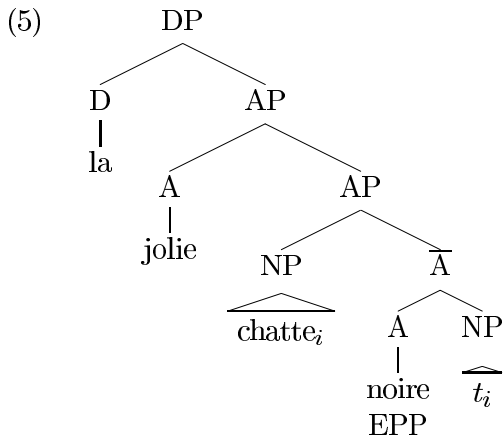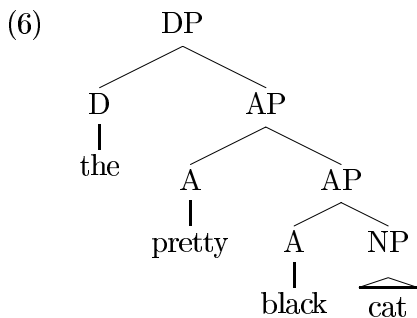
I hypothesize, then, that an adjective may have an EPP feature which requires its specifier position to be filled. Given that French adjectives are generally either prenominal or postnominal, one might assume that this feature is a lexical property of some adjectives. In general, in English, there is no such feature on any adjective, so that the noun is never raised to Spec(AP) and therefore is always found last.

It might be asked why, at the point in the derivation when the NP is attracted for movement, pure merge does not take place, since in general, within a phase, pure merge is favored over movement [Chom98]. If the EPP feature on 'noire' is an N-feature, it must be the case that the

available N 'chatte' raises to Spec(AP). (Presumably, the entire NP headed by 'chatte' will raise via pied-piping.)

Notice next that French adjectives typically agree in Φ-features with the nouns they modify. Specifically, French adjectives are marked for number and gender. Following [Chom98], I take checking of Φ-features to occur under a c-command relation. In the construction above, it is obvious that 'noire' c-commanded the N in its base position, allowing Φ(noire) to be checked. Following the move of the NP, both the adjective 'jolie' and the determiner 'la' (which also shows number and gender agreement with the N) c-command the N and hence may check their Φ-features.

This structure is also satisfactory from the point of view of Kayne's Linear Correspondence Axiom, which requires that a linear ordering follow from asymmetric c-command relations within the structure [Kayn94]. Specifically, for example, there are no multiple specifier/adjunct positions. Bringing Kayne's antisymmetry into the picture, however, does require a reconsideration of the structure of the English construction, which does have multiple specifiers within the NP and bare heads in specifier position, both of which are illicit under the LCA. This can be ameliorated by making the adjectives heads, following Abney [Abne87]:

(6)

```
              DP
             /  \
            D    AP
            |   /  \
           the A    AP
               |   /  \
            pretty A   NP
                   |    |
                 black cat
```

Based on key elements of the current theory of syntax (antisymmetry, the attract view of movement, and agreement via c-command), I have arrived at a basic structure for adjectival modification. The remainder of this discussion will consider data presented in other work on adjectives, largely pre-Minimalist, in an attempt to expand this explanation and provide a unified, cross-lingually valid account of other adjective phenomena, including:

- predicative adjectives

- clitics within the determiner phrase

- bounds on the fertility and type of prenominal adjectives

- variation in agreement in the DP

- adjective ordering restrictions

2   Predicative adjectives

A distinction is often drawn between adjectives which can be used as predicates and those which cannot. An obvious instance of a predicative adjective is 'proud' in a construction such as (7):

(7)   The man was proud.

Certain adjectives have been noted to be impossible in such overtly copular constructions:

(8)   a.   * The indignity was utter.

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b.   * The murder is alleged.

c.   * His wife is former.

The term "attributive adjective" is sometimes used to describe instances of adjectives that are not used predicatively.

Cinque made use of the distinction between predicative adjectives and attributive adjectives to account for mirror-image examples in which the Romance ordering of adjectives (with respect to each other) is the mirror image of the English ordering [Cinq94]. Given the analysis in which the noun moves among the adjectives (which are assumed to be ordered according to universal ordering restrictions) within the DP in languages like French, these examples are surprising:

(9)   a. un fruit orange énorme
          a   fruit orange huge

      b. un poulet froid délicieux
          a   chicken cold delicious

(10) a. a huge orange fruit

      b. a delicious cold chicken

Cinque argued that the noun movement analysis is in fact correct, the difference being attributed to the status of (in the above examples) 'énorme' and 'délicieux' as predicative adjectives which necessarily follow the noun's complement. (The presence of a (base-generated) post-complement modifier is not tenable under the Linear Correspondence Axiom of [Kayn94], a point to which I will return.)
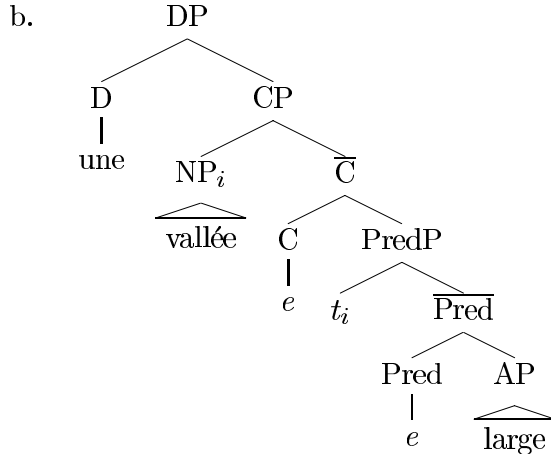
The status of an adjective as predicative or attributive is, I suggest, a token rather than type distinction. In other words, an adjective may act as a predicative or an attributive depending on its context. Consider, from [Bern91]:

(11) a. une large vallée
          a   large valley
          'this valley as a member of a class of large-valleys'

      b. une vallée large
          a   valley large
          'member of a class of valleys, which happens to be large'

Here we see a single lexical element, 'large,' applied in different contexts to the same noun, with different interpretations.[1] This might be explained if 'large' is really two separate lexical elements, one of which is prenominal (i.e., has no EPP feature under present assumptions) and the other of which is postnominal (i.e., attracts an NP to its specifier position). A cleaner (and likely more learnable) explanation follows if the structures are as follows:

(12) a.

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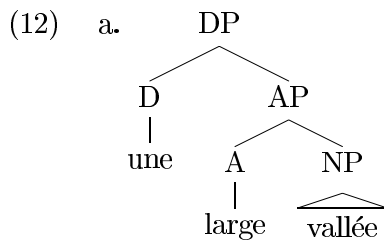
[1]This example may be contrasted with certain other French adjectives, most notably 'grand' and 'pauvre,' which take on different semantic interpretations depending on their position with respect to the noun. The lexical item 'large' is interpreted, to the best of my knowledge, the same way in both positions, though the DP meanings are distinct.

b.

```
            DP
          /    \
        D        CP
        |      /    \
       une  NP_i      C̄
           /  \      /  \
        vallée  C      PredP
                |     /     \
                e   t_i      Pred̄
                          /      \
                       Pred       AP
                        |        /  \
                        e      large
```

Positing the presence of a "predicate" element is hardly novel, and doing so allows us to provide a unified account of copular predicates with that of predicative adjective tokens. In copular constructions, the copula serves as the predicate. This structure is also in keeping with the LCA in that there is no claim of base-generation of the surface-apparent postnominal adjective as a right-adjunct of the noun. In fact, this structure is almost identical to Kayne's structure for relative clauses [Kayn94]; I will return to the issue of the movement of NP to Spec(CP).

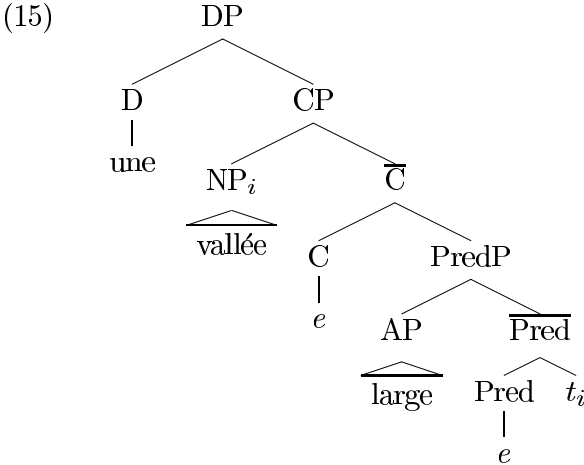This account can also explain data such as the following:

(13)   a. a man proud of his son
       b. * a proud of his son man

Here we see that a complex adjectival modifier in English must follow the noun. I propose that any such modifier must be predicative; consider the following, in which the adjectives are known to be incapable of holding predicative status:

(14)   a. * an indignity utter as it was obvious
       b. * the wife former of John
       c. * a murder alleged until yesterday

If the structure of a predicative adjective is as in (12b), with the NP pure merged in the Spec(PredP), then these data are unsurprising. The complement position of the adjective is free to be the PP 'of his son' in (13a), rather than containing (as in attributive constructions) the NP. If my analysis is correct, we would never expect attributive adjectives (that is, instances of adjectives used attributively) to have overt complements.

Finally, it is necessary to note that all French adjectives, including predicatives, agree with the nouns they modify. Hence at some point in the derivation, the A(P) must be in a Φ-feature checking configuration with the NP. This is easily accomplished if the adjective originates in Spec(PredP) and the noun in Comp(PredP):

(15)

```
                    DP
            ┌────────┴────────┐
            D                 CP
            |           ┌──────┴──────┐
           une        NP_i            C̄
                      ╱──╲        ┌────┴─────┐
                     vallée       C          PredP
                                  |       ┌────┴────┐
                                  e      AP         Pred̄
                                       ╱──╲      ┌───┴───┐
                                      large    Pred     t_i
                                                |
                                                e
```

The relative positioning of AP and NP within the PredP is not necessarily universal across languages, and I refrain from making any strong claims about it. In the next section, I will show some independent motivation for accepting structures like (15) over (12b) in Mandarin, and in Section 5 I will show motivation for the reverse in German.

I turn next to the phenomenon of "indirect modification," as described by Sproat and Shih [SpSh91]. Mandarin makes use of indirect modification in many adjectival constructions; the morpheme 'de' is the marker for relative clauses, possessives, and the modifier clauses of interest:

(16)   a.   fāng-de   zhuōzi
            square-de table

            'square table'

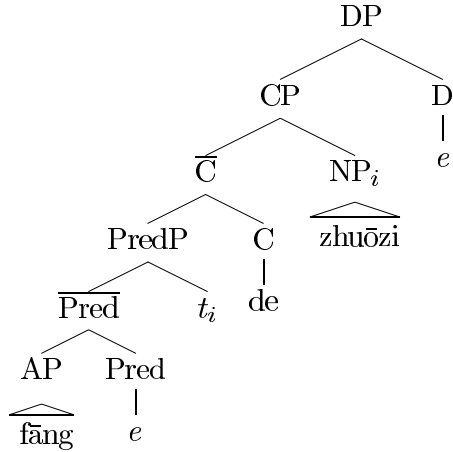   b.   wǒ-de huāpíng
            I-de   vase

            'my vase'

Sproat and Shih argue that this modifier clause is a relative clause with a structure like (17).

(17)

```
                    N̄
            ┌───────┴───────┐
           CP              N_i
        ┌───┴───┐
       IP      Op_i
      ╱──╲
    e_i   A
```
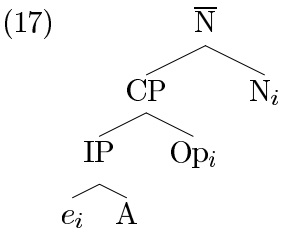
They suggest that the adjective assigns its θ-roles to the phonologically empty variable, which is bound to the operator Op, which by virtue of coindexation with the noun assigns the role.

This is similar to the predicative adjective construction proposed above. We might say, then, that the structure of indirect modification in languages like Mandarin involves a predicative structure with an overt element ('de') in the position of C^0. For (16a), for example, the structure might be:

(18)

```
                            DP
                         /      \
                       CP         D
                      /   \       |
                    C̄      NP_i    e
                   /  \     |
               PredP   C   zhuōzi
                / \    |
              Pred  t_i de
              / \
            AP   Pred
            |     |
          fāng    e
```
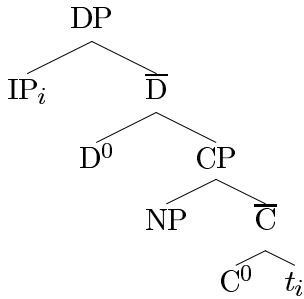
The problem with (18) is that it fails under the LCA. Specifically, the ordering of the specifier, head, and complement positions of the PredP (and also the DP, less critically) are the reverse of what is expected under Kayne's theory [Kayn94], in which heads are generated to the left of their complements, specifiers to the left of the head.
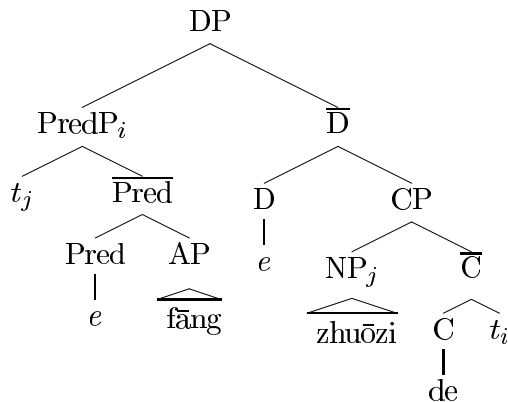
Kayne [Kayn94] considers relative clauses in languages that are N^0-final, specifically focusing on Japanese and Amharic. He notes that "N^0-final relatives never display a complementizer that is identical to the normal complementizer of sentential complementation."[2] Mandarin appears to provide a counter-example to this claim. The structure he proposes is as follows:

(19)

```
          DP
         /   \
       IP_i    D̄
              /   \
            D^0    CP
                  /   \
                NP     C̄
                      /  \
                    C^0   t_i
```

Applied to (16a), this fails to produce the correct linear ordering:

(20) *

```
                         DP
                     /        \
                 PredP_i       D̄
                 /    \       /   \
               t_j    Pred   D     CP
                      / \    |    /   \
                   Pred  AP  e  NP_j    C̄
                    |    |      |      /  \
                    e   fāng  zhuōzi  C    t_i
                                      |
                                      de
```

---

[2]This claim is attributed to Keenan, who stated, "... we know of no cases where the clause-final complementizer in relative clauses is identical to the clause-final complementizer used with sentential objects of verbs of thinking and saying. However, this may reflect an absence of knowledge on our part and not a regularity concerning prenominal relative clauses" [Keen85]. I deem it irrelevant to the matter at hand whether Mandarin thinking/saying verbs in particular utilize the 'de' morpheme; it clearly acts as the complementizer for relative clauses.

In the structure above, the PredP is generated according to the structure in (12b); similar problems would follow for the structure in (15). The PredP is then merged to become the complement of the complementizer ('de'), and the NP is raised to Spec(CP) owing (presumably) to an EPP feature on 'de.' The CP then merges with the determiner (empty in Mandarin), and finally the PredP is raised to Spec(DP) (again owing to an EPP feature). If we seek to maintain Kayne's theory of antisymmetry, the failure of this structure suggests that the Mandarin indirect modification structure does not behave like other N^0-final relative clause structures.

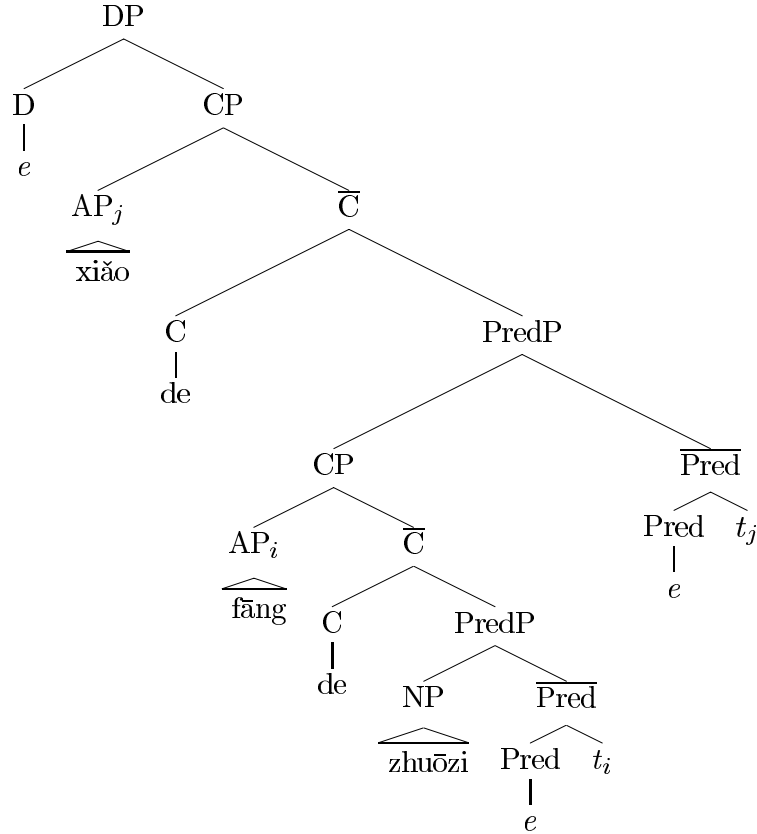Suppose that the AP, instead of the NP, is attracted to Spec(CP), in a structure like one of the following. For the moment, I will avoid committing to a hypothesis that claims the AP originates in either Spec(PredP) or Comp(PredP).
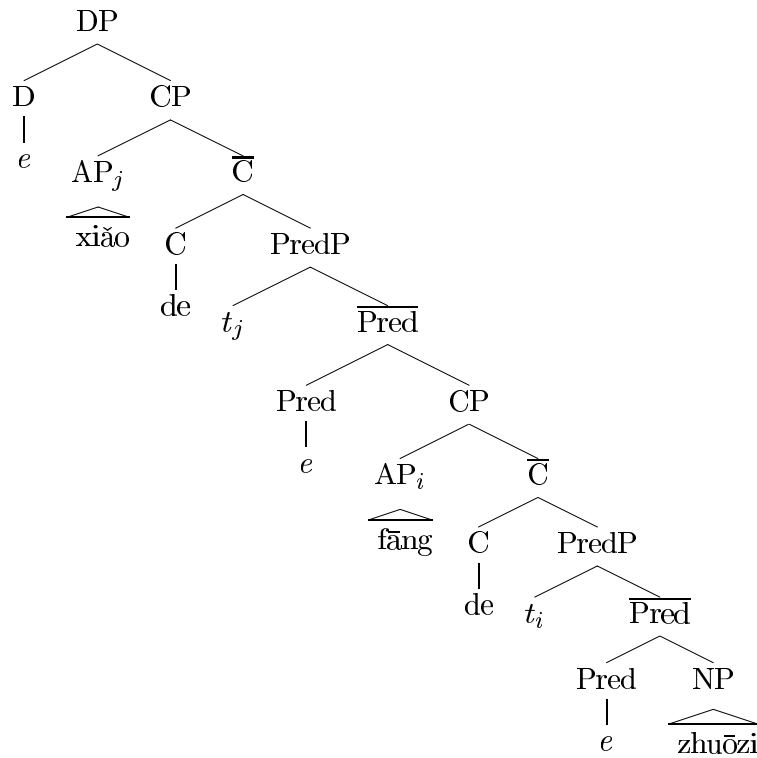
(21)
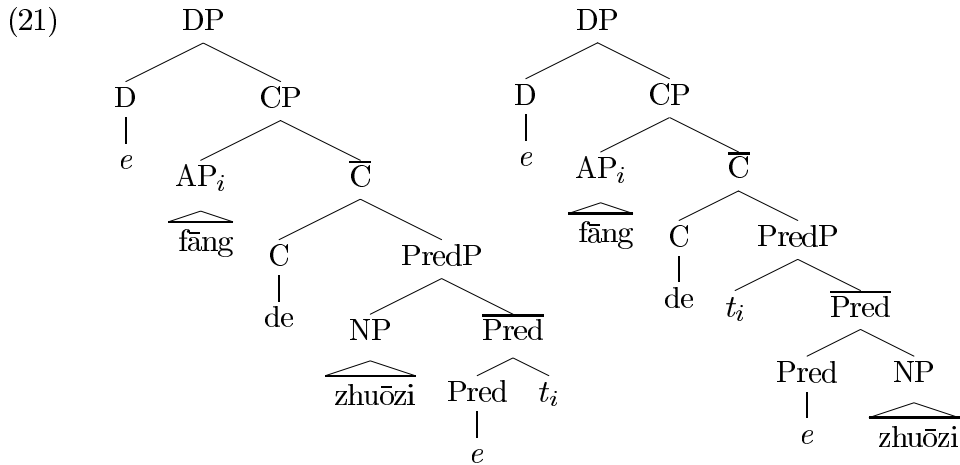
Either structure can account for stacked structures like (22); see (23, 24).

(22) xiǎo-de fāng-de zhuōzi
      small-de square-de table
      'small square table'

(23)

```
                              DP
                    ┌─────────┴──────────┐
                    D                     CP
                    │          ┌──────────┴──────────┐
                    e         AP_j                    C̄
                              xiǎo        ┌───────────┴────────────┐
                                          C                       PredP
                                          │              ┌─────────┴─────────┐
                                          de            CP                  Pred
                                               ┌────────┴────────┐      ┌────┴────┐
                                              AP_i               C̄     Pred      t_j
                                              fāng        ┌──────┴──────┐  │
                                                          C            PredP  e
                                                          │        ┌────┴────┐
                                                          de      NP        Pred
                                                               zhuōzi   ┌────┴────┐
                                                                       Pred      t_i
                                                                       │
                                                                       e
```

(24)

```
              DP
        ┌─────┴──────┐
        D             CP
        │       ┌─────┴─────┐
        e      AP_j          C̄
              xiǎo    ┌───────┴───────┐
                      C              PredP
                      │         ┌─────┴─────┐
                      de       t_j          Pred
                                      ┌──────┴──────┐
                                     Pred           CP
                                      │       ┌─────┴─────┐
                                      e      AP_i          C̄
                                            fāng    ┌───────┴───────┐
                                                    C              PredP
                                                    │         ┌─────┴─────┐
                                                    de       t_i          Pred
                                                                    ┌──────┴──────┐
                                                                   Pred          NP
                                                                    │          zhuōzi
                                                                    e
```

There are theoretical motivations for accepting (24) over (23). If the AP is to move to Spec(CP), there must be a feature on 'de' which attracts some element to its specifier. The most general claim would be that 'de' attracts the highest phrase in its domain; this would make (23) surprising, since

9

the embedded CP occupies that position. Further, placing the AP in Spec(Pred) provides a better explanation for French predicative adjective agreement.

Sproat and Shih note that indirect modifiers in Mandarin may occur prior to the determiner:

(25) a. hóng-de zhèibĕn shū   zài zhuōzi shàng
          red-de   this   book at table   on
          'this red book is on the table'
      b. zhèibĕn hóng-de shū   zài zhuōzi shàng
          this   red-de   book at table on
          'this red book is on the table'
      c. Zhāngsān-de Fitzgerald-de zhèibĕn shū
          John-de   Fitzgerald-de this   book
          'this book by Fitzgerald belonging to John'

If, in fact, the pre-determiner 'de'-phrase is a non-restrictive relative clause—a claim made by Sproat and Shih, contradicting previous analyses such as [Huan87]—then the structure I have proposed does not account for it, as there is no way to raise the CP, minus the NP, to Spec(DP), the most obvious way to account for its pre-determiner position in (25b, 25c). If we follow Huang's argument that Mandarin does not have true determiners, then it could be argued that in structures like those in (25), 'zhèibĕn' is not the D^0. Instead it is either an attributive adjective (as in 26) or it is an element in Spec(NP).
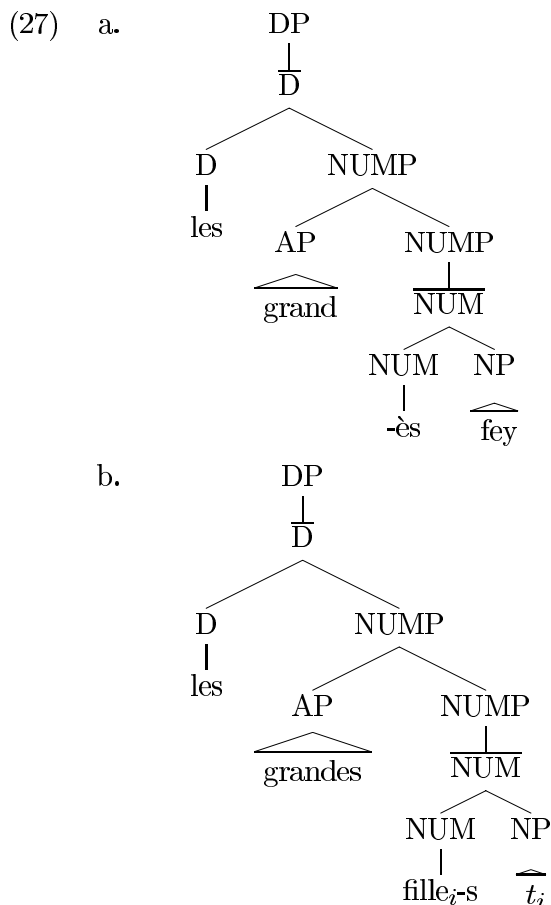
(26)
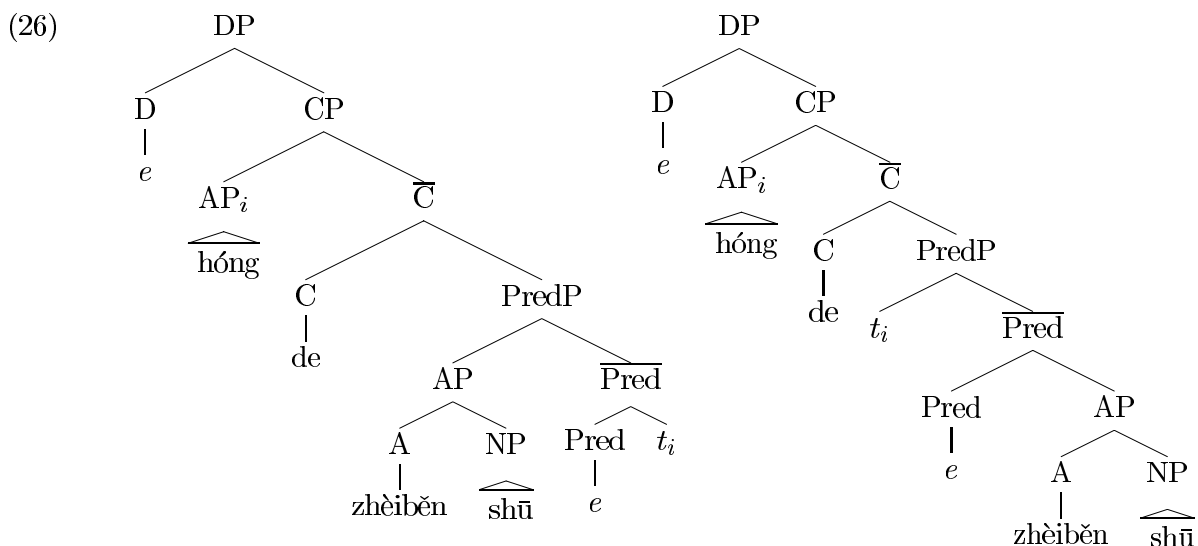
Another alternative is to assume a split-DP, as in [Laen00] (see the discussion in Section 7 on DP-internal movement). If the DP consists of two layers, it is possible that 'zhèibĕn' originates in the lower D^0 position, after which the 'de'-phrase(s) move into (functional) positions above it, perhaps for focus. Movement of the determiner to the higher D^0 then does not take place, either because it never takes place in Mandarin or because it is blocked. This is an area which requires further investigation.

3   Clitics in the DP

An interesting phenomenon discussed by [Bern91] is that of the Walloon plural marker, 'ès.' This morpheme appears orthographically attached to adjectives, but the distribution of its phonetic re-

alization suggests (Bernstein argues) that it is a marker on the noun rather than the adjective. This clitic never appears on post-copular predicative adjectives, and it appears only on the last adjective in a coordinated structure. Further, it appears attached to non-adjectives, such as 'pluzieûrès' (several) and 'trazès' (three).

Seeking to provide a unified account of Walloon and French DPs, Bernstein suggested the following structures for the plural, feminine DP that translates to "the tall girls" (Walloon and French, respectively):

(27) a.

```
                    DP
                    |
                    D
                  /   \
                 D     NUMP
                 |    /    \
               les  AP     NUMP
                   /\       |
               grand       NUM
                          /    \
                        NUM     NP
                         |      /\
                        -ès    fey
```

  b.

```
                    DP
                    |
                    D
                  /   \
                 D     NUMP
                 |    /    \
               les  AP     NUMP
                   /\       |
              grandes      NUM
                          /    \
                        NUM     NP
                         |      /\
                      fille_i-s  t_i
```

(Walloon adjectives, it is worth noting, are almost entirely prenominal. Further, Walloon nouns are not marked in speech for number in the way that French nouns are; orthographic representations do show this marking, though.)

Bernstein's primary motivation for claiming that French plural markers are distinct lexical items in the syntax appears to be to provide an explanation for colloquial French plural marking. In colloquial French, nouns are generally not marked for plurality unless they are irregular (e.g., singular 'cheval' ('horse') and plural 'chevaux' ('horses')). This claim about colloquial French becomes largely unnecessary under the Minimalist program, however. If we assume that lexical items enter the derivation fully inflected, then there seems little reason to assume that a separate NUM category is present in French at all. The plural form of 'fille' would enter the derivation fully marked (i.e., with no phonetically-interpretable plural morpheme). In the irregular cases, the plural-marked lexical items would simply happen to take on different phonetic forms. In fact, a structure like the one shown in (27b) requires the element in Comp(NUMP) (i.e., the NP) to move and adjoin with the NUM head itself. This type of movement, into a head position, is difficult to

account for in the current theory; the alternative, that only the N moves (head movement), clashes with current tendencies to rule out head movement as an element of the theory [Kayn94].

In Walloon, however, the claim about a separate 'ès' morpheme appears to be well-founded, owing to its cooccurrence with noun-phrases and attachment to modifiers. The structure I suggest is similar to (27a):

(28)

```
              DP
            /    \
          D       AP
          |      /  \
         les    A    NUMP/NP
              grand   /    \
                    NUM    NP/N
                     |      fey
                    -ès
```
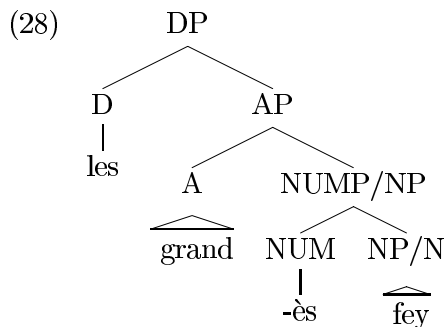
It is not clear whether the noun or 'ès' is the head of the phrase in Comp(AP); I can see no reason to choose one hypothesis over the other. Φ-feature checking would take place (at least) between 'les' and 'ès' (for number), between 'ès' and 'fey' (for gender), and between 'grand' and 'fey' (for gender). All of these agreement checks succeed as each pair is in the appropriate c-command configuration.

Bernstein's other motivation for positing a NUMP projection in French was that it offered a landing site for the NP when it moves to the left of the adjective. Under the assumption that the NP has moved to Spec(AP) in such constructions, NUM as a landing site is no longer necessary.

A loose end to be explained is the absence of the 'ès' morpheme in DPs with no adjectives. Bernstein suggests that the definite article must be "lexically supported" (licensed) by the noun, with no intervening functional categories. Under the Minimalist approach, there are a few explanations that would account for this. First, it might be the case that, in Walloon, D selects AP or NP but not NUMP. Hence a merge of D with 'ès fey' would be impossible if 'ès' is the head of that object. Second, a parallel can be drawn between this phenomenon and the that-trace effect (in which there are constraints on the contents of the specifier of a head's complement). An explantation of that phenomenon could be extended to the DP as well, if 'ès' is in Spec(NP). Another option is to claim that 'ès' simply undergoes PF-deletion if there is nothing for it to attach to, and 'les' does not admit affixation.

4 Boundedness

Though remarkably productive, there are bounds on the number and type of attributive adjectives which may modify a single noun. Sproat and Shih made some interesting generalizations about Mandarin adjectives [SpSh91]:

1. Only two adjectives may precede the noun in direct modification.

2. These two cannot be in the same semantic class, where the classes of interest are "absolute" (color or shape) and "relative" (size or quality).

They suggest that the second generalization follows from a grammaticalized avoidance strategy in which speakers seek to avoid choosing an ordering between two adjectives in the same class by instead using the predicative 'de' construction (see Section 2). The first generalization follows from

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the second, since only one adjective from each of the two classes may be present in a DP. (Sproat and Shih raised these observations in discussing adjective ordering restrictions (i.e., restrictions on the order of adjectives with respect to each other, within a DP).)

Bounds on adjective fertility within a DP are not specific to Mandarin. In English, adjectives within the same class cannot always modify the same noun (in attributive configurations):

(29)　a.　* a black white zebra

　　　　b.　* a white black zebra

(30)　a black and white (white and black) zebra

(31)　a.　* a wood leather shoe

　　　　b.　* a leather wood shoe

(32)　a wood and leather (leather and wood) shoe

Note that the conjoined adjectival modifier is well-formed (30, 32). Noting the correlation between adjective fertility bounds and hierarchical (rather than parallel, conjoined) modification, I will extend Sproat and Shih's account of boundedness to fall under the requirements of well-formed syntactic derivation, in Section 6.

5　Variation in agreement

This section describes and analyzes agreement as exhibited in German DPs; the analysis will be extended in Section 6 to explain adjective-ordering restrictions. The data presented here are taken directly from [SpVa67].

5.1　Attributive adjectives in German

In German, adjectives and determiners generally agree in number, gender, and case with the noun they modify:

(33)　a.　dieser　　　　　　　Wein
　　　　　　this-Masc-Sing-NOM wine-Masc-Sing-NOM
　　　　　　'this wine'

　　　　b.　guter　　　　　　　Wein
　　　　　　good-Masc-Sing-NOM wine-Masc-Sing-NOM
　　　　　　'good wine'

(34)　frisches　　　　　　　brot
　　　　fresh-Neut-Sing-ACC bread-Neut-Sing-ACC
　　　　'fresh bread'

(35)　lange　　　　　　Sätze
　　　　long-Plural-ACC sentences-Masc-Plural-ACC
　　　　'long sentences'

However, when an adjective is preceded by a determiner that takes a strong ending (i.e., agrees in all possible respects—number, gender, and case) with the noun, it takes a "weak" ending, exhibiting less agreement with the noun:

(36) dieser   gute   Wein
      this-Masc-Sing-NOM good-Masc-NOM wine-Masc-Sing-NOM
   'this good wine'

The weak endings significantly diminish the feature-wise discriminatory power of the adjective; there are only two forms: '-e' for masculine singular nominative, and neuter and feminine singular nominative and accusative; '-en' for everything else. (In contrast, there are five "strong" endings for German nouns.)

Another set of determiners may have the same effect on noun features, but only when these determiners take the strong ending themselves. These include 'ein' (the indefinite singluar article), 'kein' (the negation of the same), and the possessives 'mein' ('my'), 'dein' ('your'), etc. These morphemes do not take strong endings in their masculine singular nominative or neuter nominative and accusative forms.[3] In those cases when they do not take strong endings, adjectives that follow them *do* take on strong endings. Consider:

(37) a. ein gutes   Bier
          a   good-Neut-Sing-NOM beer-Neut-Sing-NOM
          'a good beer'

      b. einer   gute   Suppe
   a-Fem-Sing-DAT good-Fem-Sing soup-Fem-Sing-DAT
          'a good soup'

The quantifiers 'solcher' ('such') and 'mancher' ('many a') also take on strong endings and prevent succeeding adjectives from taking strong endings.

We may assume that these prenominal agreeing adjectives are in attributive structures; in Section 5.2 I will discuss the fact that predicative adjectives do not exhibit agreement in German. If this is the case, the structure of (36) and its ill-formed counterpart, under my analysis, would be as follows.

(38) a.

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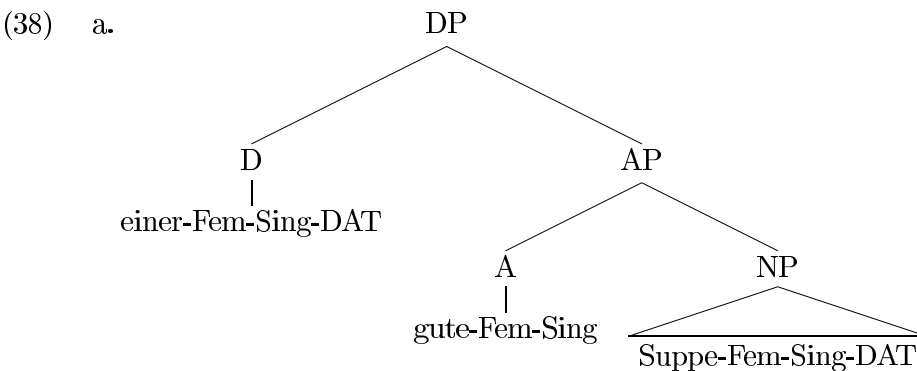
[3]These examples of a few-featured determiner followed by a more fully-featured adjective do not fit straightforwardly in the explanation I give here for the phenomenon, unless it is assumed that the special forms of the 'ein' words are simply uninflected. This is compatible with the data: in the three cases where 'ein' words do not take a strong ending, they take no ending at all and therefore can be assumed not to seek out agreement relations with the noun.

14

b. * DP

D
|
einer-Fem-Sing-DAT

AP

A
|
guter-Fem-Sing-DAT

NP

Suppe-Fem-Sing-DAT
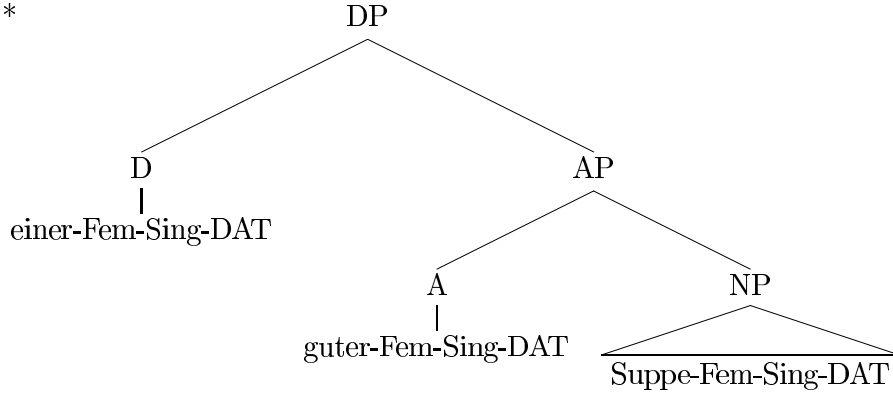
Note that the presence of all agreement features on the adjective is responsible for rendering (38b) ill-formed. It could be the case that a full complement of features on the adjective block agreement-checking between the determiner and the NP. When 'einer' goes to check its Φ-features (and case; for this discussion I do not differentiate) with the NP, it finds the nearest item in its domain that has a full complement of Φ-features. In (38b), this is 'guter.' Agreement holds between the 'einer' and 'guter.' This prevents 'einer' from looking past the adjective, and so it never checks its features on the NP. I propose the following:

- As in [Chom98], Φ-feature checking is carried out via an Agree mechanism that operates over a c-commanded domain.

- One element in the domain may *block* agreement with another element if it is closer (in the simplest sense) to the c-commanding element and it has a feature signature that is capable of doing so (e.g., a full complement of Φ-features in the example at hand).

- If the blocking element does not meet the categorial criteria of the c-commander, then the derivation crashes.

"Categorial criteria," in this discussion, refer to the requirement that the Φ-features of a determiner be checked against a noun phrase. Note that this is subtly different from a so-called N-feature, which might motivate attraction of the NP to Spec(DP). The claim that a determiner requires an NP for its feature checking seems uncontroversial and might be extended to sentential structures (e.g., requirements of V, v, and/or T about the elements that may check their Φ-features).

In German, when multiple adjectives modify a noun in a series (without a determiner), they all take the strong endings. This might suggest that one adjective does not block another adjective's access to the noun for feature checking, unless attributive adjectives in German are in a conjoined structure, as has been proposed for French by [SpSh91].[4] Or, it could be the case that what blocks feature checking is not a full complement of features, but simply "too many" features, and the adjectives, when ordered grammatically, do not block each other. I will develop this idea further in Section 6.

---

[4]This discussion has not carefully covered instances of parallel modification, which Sproat and Shih argue does not exhibit ordering restrictions. If, as I will propose in Section 6, ordering restrictions are the result of blocking in c-command configurations, then the Sproat and Shih conclusion would be unsurprising, since the conjoined adjectives would not be in successive c-command relations with each other and the NP, under at least some views of conjunction structures. Given the extensive discussion of [Laen00], it appears unlikely that French prenominal adjectives are parallel (since they exhibit ordering restrictions) if Sproat and Shih's conclusion is correct. Further, following Kayne's treatment of non-restrictive relative clauses, I suspect that there may be an account for the intonational patterns exhibited in supposedly conjoined-adjective languages that does not rely on a different structure.
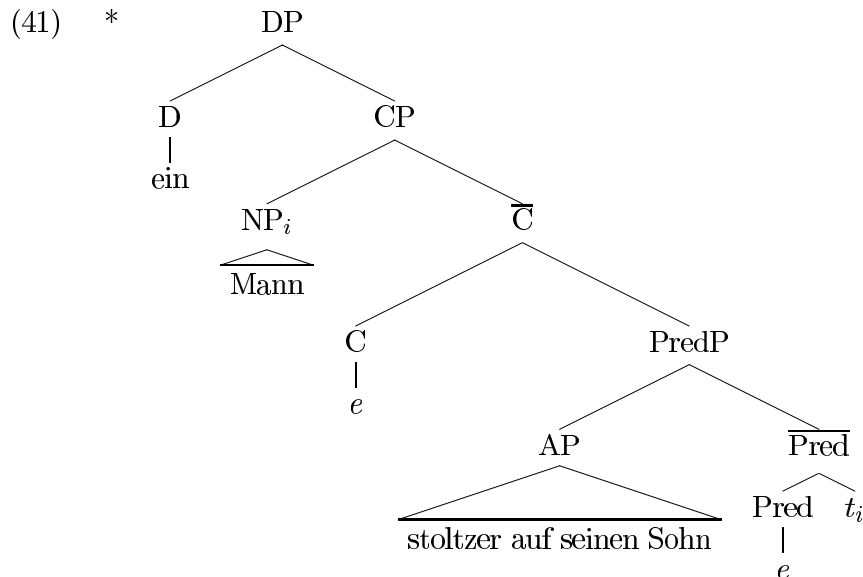
5.2   Predicative adjectives in German

Additional support for the hypothesis that predicative adjectives are structurally different from attributive adjectives comes from the fact that, in German, predicative adjectives do not agree with the noun. This includes both "heavy" post-nominal adjectives[5] and copular constructions:

(39)   a.   ein Mann stolz   auf seinen Sohn
            a   man   proud of   his   son

        b.   der Mann war stolz
            the man   was proud

        c.   ein stolzer   Mann
            a   proud-Masc-Sing-NOM man
            'a proud man'

The patterns of agreement shown above can be explained by the predicative structure in (12b). If the structure of German PredP places the AP in the complement, then there is never a chance for a predicative adjective phrase to check agreement features with the NP, since it never c-commands the NP. On the other hand, if the AP is in Spec(PredP), it should be able to agree with the noun phrase. This is exemplified in (40), which is well-formed; (41) shows how the other structural option would lead to agreement that does not fit the data.

(40)

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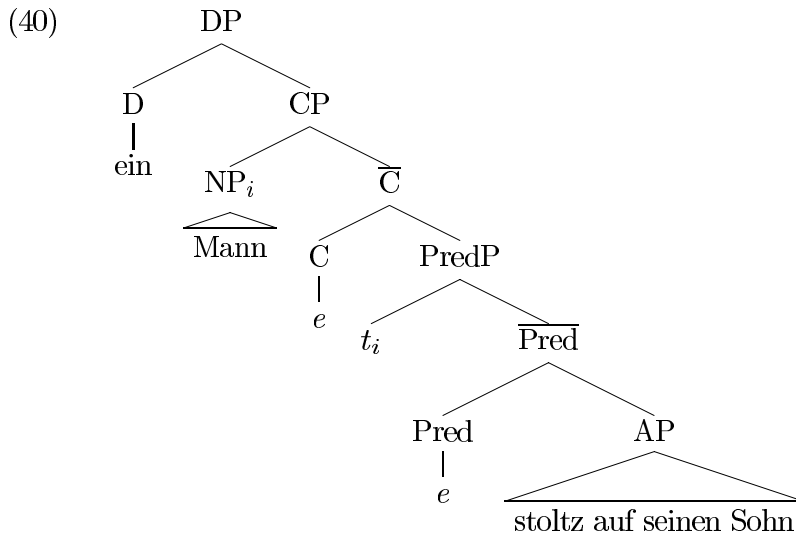
[5]I am not completely certain of the facts in this case.

(41) *

```
                    DP
            ┌────────┴────────┐
            D                 CP
            │          ┌───────┴───────┐
           ein        NP_i              C̄
                      ╱╲        ┌────────┴────────┐
                    Mann        C               PredP
                                │        ┌────────┴────────┐
                                e       AP               P̄red
                                       ╱──╲          ┌────┴────┐
                              stoltzer auf seinen Sohn  Pred   t_i
                                                        │
                                                        e
```

To see how this account bears out more generally, it would be worthwhile to consider languages with both adjective-noun agreement and prenominal predicative structures; if I am correct, then agreement is expected to hold between the noun and such adjectives.

6   Adjective-ordering restrictions

Sproat and Shih [SpSh91] present a cross-linguistic study of the widely-observed phenomenon of adjective-ordering restrictions (AOR). I have to this point specifically avoided this issue, but given the analyses of other adjective phenomena above, I now suggest some ideas on how ordering might be brought under the umbrella of syntax.
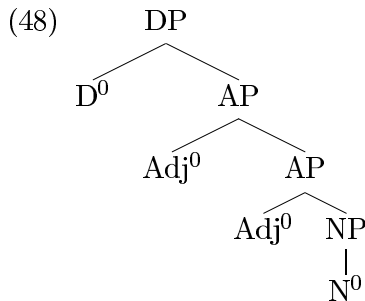
Sproat and Shih drew two important conclusions. First, AOR apply only but likely universally to hierarchical, direct modifiers; my analysis equates that class of adjective tokens with attributive adjectives. Second, they note that AOR are not as strict among some adjective types as others. In particular, while (in English), absolute adjectives (e.g., color and shape words) occur closer to the noun than others (e.g., size and quality words), the ordering within those two classes is less strict:

(42)   a.   beautiful blue house
       b.   * blue beautiful house
(43)   a.   enormous red peach
       b.   * red enormous peach
(44)   a.   oversize round table
       b.   * round oversize table
(45)   a.   pretty round sundial
       b.   * round pretty sundial
(46)   a.   gorgeous immense house
       b.   ? immense gorgeous house
(47)   a.   serpentine green vase
       b.   ? green serpentine vase

Sproat and Shih use this one-adjective-instance-per-class generalization to account for the limit in Mandarin of two direct modifiers (see Section 4). A great deal of other work in this area has been based on the assumption that structural positions correlate with the semantic classes of the adjectives that fill them; it is this type of analysis that I consider next.

Laenzlinger provides a detailed account of attributive adjective configurations in French (*adjectifs épithètes*) [Laen00]. Specifically, he sought to explain the observed ordering among such adjectives in French, with respect to each other and the noun.

Laenzlinger notes three approaches to the analysis of attributive adjective constructions. These are an adjunction-based approach (e.g., [SpSh91], in which adjectives are adjuncts to the noun in the X-bar theoretic sense), a specifier-based approach (e.g., [Cinq94], in which adjectives are in the specifier positions of functional categories within DP), and the head-based approach of [Abne87] that I have adopted. Laenzlinger follows the specifier analysis, specifically noting two problems with the approach of Abney: licensing of AP in configurations like (48) appears impossible on grounds of categorial selection, and "it is quite difficult on the basis of the structure of noun phrases to derive alternatively the pre-/postposition of adjectives with respect to the noun they modify."

(48)

```
           DP
          /  \
        D⁰    AP
             /  \
          Adj⁰   AP
                /  \
             Adj⁰   NP
                     |
                     N⁰
```

I have already shown how NP-movement to Spec(AP) can account for the presence of the NP in any position among the attributive adjectives that modify it. As for the question of categorial selection, it seems unproblematic to claim that (a.) attributive instances of an adjective select for either NP or AP complements, and (b.) determiners select for AP or NP.[6] Short of infinite regress, these categorial selection rules will require that an NP be at the base of an attributive-adjective DP.

Laenzlinger goes on to argue for a highly-specific DP template in which a single functional position for each adjective type, layed out in a strict order, is present. The adjective types correspond to semantic classes, so that two adjectives in the same class may not cooccur in a single DP (since only one position is available for an adjective of a given class). This is a good empirical result, but it does not go far enough. In Mandarin, as noted in Section 4, adjectives in certain distinct class pairs may not cooccur; as noted by Sproat and Shih, the limitation seems to be on fairly broadly defined classes (absolute vs. non-absolute) [SpSh91].

One might claim that the semantic classes are language-specific. Under this claim, English and French classes would be narrow and numerous, while Mandarin classes would be small. If this is the case, such classes must be learnable. While it is clear that the adjective ordering classes correlate strongly with semantic classes, an interesting question is whether they may be translated into syntactic features that help drive the derivation and explain boundedness effects. This would be ideal, in a sense, in that a single explanation might be given to syntactic (ordering) and semantic (class) phenomena. In other words, do the same features that distinguish semantic classes of adjectives drive their relative positions in the derivation?

---

[6]Determiners may also select for CP, as in the predicative configurations discussed in Section 2.

18

Suppose that adjectives have, in addition to a possible set of Φ-features, a set of semantic class features that define the class of the adjective. I will call these χ-features. These features must be checked by agreement with an N(P). These features, like the Φ-features in German (see Section 5) can cause a crash if they are blocked from agreement with an N(P). Hence one adjective could potentially block another adjective's agreement if its χ-features are so capable.

I suggested previously that "too many" features (now χ-features) might block agreement. Let us take "too many" to mean, precisely, "contains (at least) the set of all features held by the c-commander." In (49), C, which has three χ-features (as denoted, x, y, and z), seeks to agree with B, but it is blocked by A. This structure would crash if C's categorial requirement is not satisfied by the category of A. In contrast, the configuration in (50) will succeed, since A does not contain the full set of features held by C.

(49)   *

C-x-y-z

  A-x-y-z

    NP

    B-x-y-z

(50)

C-x-y-z

  A-x-z

    NP

    B-x-y-z
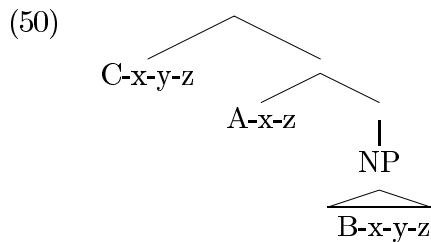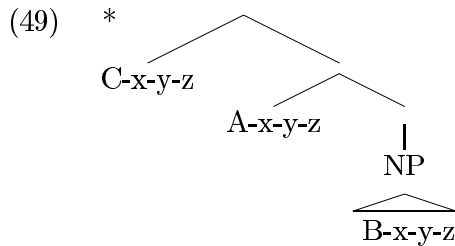
The set of features present is likely to be language-specific, since the bounds on fertility and type of attributive adjectives are not universal. The case of Mandarin is fairly straightforward: the so-called absolute adjectives are less rich in χ-features than the non-absolute adjectives. As a result, an absolute attributive adjective cannot c-command a non-absolute adjective in the DP or it will be blocked from checking those χ-features. The Mandarin bound of two adjectives is also explained by blocking. Two adjectives in the same class will each contain the same set of χ-features, so regardless of their positions, the lower one will block the higher one. Bounds in English are not as strict, suggesting more features—at least for those speakers who find many adjectives acceptable.

It is worth mentioning that adjective fertility (and perhaps also ordering) restrictions, in English at least (and, given Laenzlinger's complex account of French), appear to vary among speakers. If these restrictions are the result of latent χ-features then this is unsurprising. Such features are not surface-apparent except insofar as they create implicit classes. If these classes are only partially learnable on the basis of primary linguistic data, then multiple hypotheses about the χ-features of different adjectives might be entertained on the basis of the data. Even further, multiple hypotheses about the set of χ-features present in the language might be entertained on the basis of the same data. As a result, variation in acceptability judgements, among speakers, would be expected. This hypothesis would be supported by an empirical study showing a paucity of multiple-adjective constructions in child-directed speech, and also by a study of acceptability judgements of multiple-adjective constructions that showed significant differences among speakers of the same language.

The kinds of χ-features made available to the lexicon are likely limited by the UG, since (a.) these features correspond closely to semantic features (and may, in fact, be identical to semantic features); and (b.) the ordering patterns of adjectives are highly similar across languages, despite

varying levels of freedom.

To summarize, this approach to adjective-ordering restrictions has several benefits:

- It allows an account of universally-observable ordering restrictions without calling for universal semantic classes.

- There are no claims about a DP-template, as in [Laen00], which is a troublesome prescription under the Minimalist, bottom-up approach to derivation. (See Section 7.)

- It explains boundedness in terms of implicit featural constraints, without resorting to claims about limitations of the cognitive system.

- It can account for wide speaker variation within a language.

7 DP-internal movement

Although he follows the specifier-based account of adjective positioning, Laenzlinger's account of *adjectifs épithètes* is, nonetheless, easily adapted into the adjective-as-head framework proposed here. The structure he proposes is based on a split-DP hypothesis, in which there are two DP categories, the higher of which expresses referentiality and deixis (external properties), and the lower of which expresses definiteness, indefiniteness, and partitivity (internal properties).

Laenzlinger notes that attributive adjectives in French are prenominal in three cases:

1. when the adjective is weak;

2. when the adjective has emphasis or a strong subjective reading;

3. when the adjective is a quantifier.

The structure he proposes is as in (51):

(51)

```
                    DP_ext
                   /      \
                D^0_j      QuantP
                          /      \
                      A_quant    SubjP
                               /      \
                           A_subj     WeakP
                                     /      \
                                 A_weak      FP
                                            /   \
                                        NP^0_i   DP_int
                                                /      \
                                              t_j       FP
                                                       /   \
                                                     t_i    FP_adj
                                                           /      \
                                                         t_i       ...
                                                                /      \
                                                             t_adj    FP_adj
                                                                     /      \
                                                                   t_i       ...
                                                                          /      \
                                                                       t_adj    ...
                                                                                 |
                                                                                t_i
```
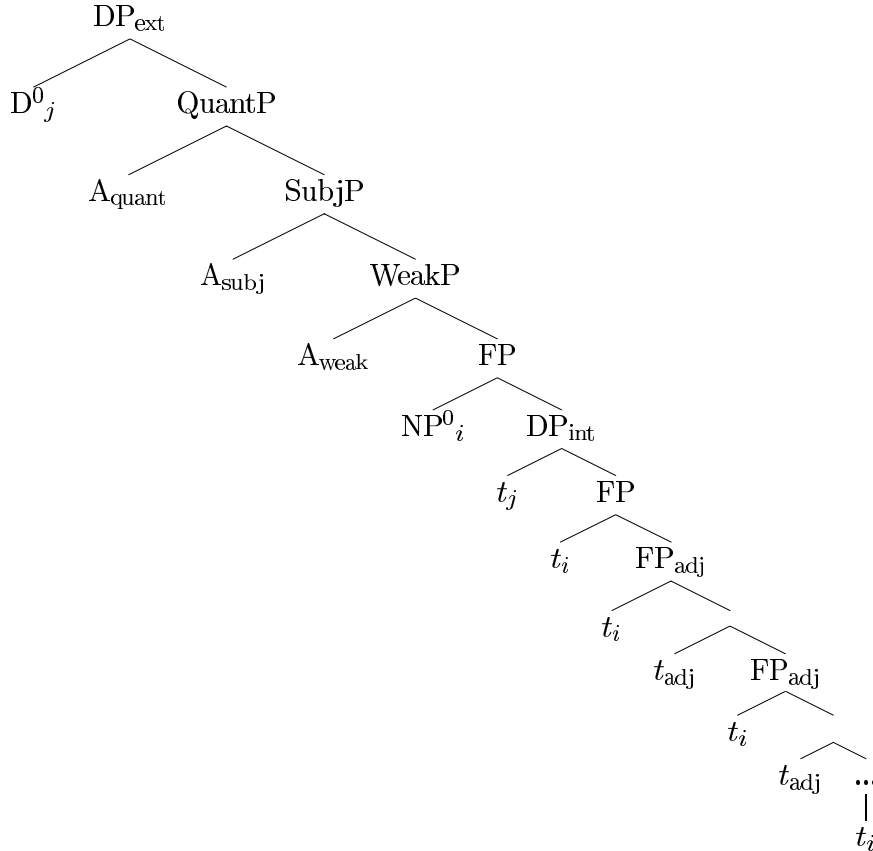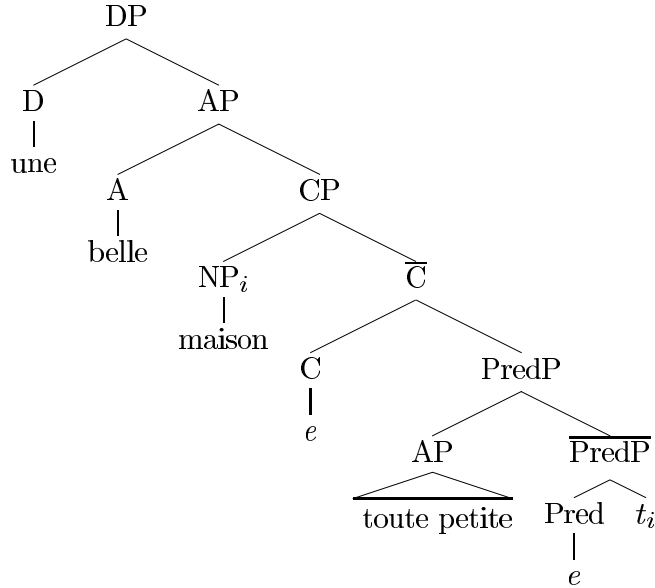
Several types of movement, he argues, take place inside the DP. The NP raises to the specifier of a functional category immediately dominated by the lower, internal DP. The NP might move cyclically through the head positions of other functional categories, and it might "snowball," picking up adjectives as it goes. Next, adjectives that are weak, subjective, or quantifiers and that have moved with the NP will raise respectively to positions designated for them between the two determiner positions. Finally, the determiner raises to the head of the higher, external DP position. Note that all of these moves are into head positions.
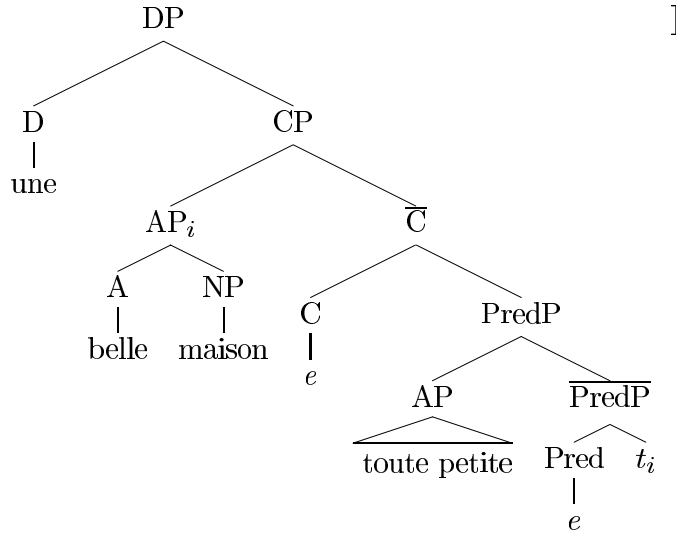
Laenzlinger's understanding of predicative adjectives is distinctly different from mine; in particular, he considers predicativeness a property of the adjective type, rather than token. I have specifically argued against that approach. Another question is how attributive and predicative adjectives interact. In Mandarin, the attributive adjectives appear closer to the noun than the indirect 'de' adjectives, suggesting that they are merged with the NP before it is merged into the predicate phrase. In N-initial relative clause languages (like English and French), it is unclear whether the attributive adjectives are merged with the noun before or after the predicate phrases are constructed (see (53) for phrase markers of the two constructions).

(52)   une belle maison toute petite

(53) a.

```
                        DP
                    /        \
                  D           AP
                  |         /     \
                 une      A          CP
                          |        /     \
                        belle    NP_i        C̄
                                  |         /    \
                               maison     C         PredP
                                          |       /      \
                                          e     AP          PredP̄
                                              /    \       /      \
                                        toute petite  Pred    t_i
                                                       |
                                                       e
```

b.   DP   ]

```
                    /        \
                  D           CP
                  |         /     \
                 une     AP_i         C̄
                        /    \      /     \
                      A      NP    C         PredP
                      |      |     |       /      \
                   belle  maison  e      AP          PredP̄
                                       /    \       /     \
                                 toute petite  Pred    t_i
                                                |
                                                e
```

    Laying this issue aside for the moment (and also that of prepositions within the noun phrase), I believe the various types of movement proposed by Laenzlinger, in his attempt to account for the facts in French, can be adapted to the present framework with some benefits. In particular, I eliminate the need for any movement into a head position, which is not a well-explained phenomenon. It would be preferable if DP-internal movement could be explained in the attract-to-specifier paradigm widely observed elsewhere in the Minimalist theory.
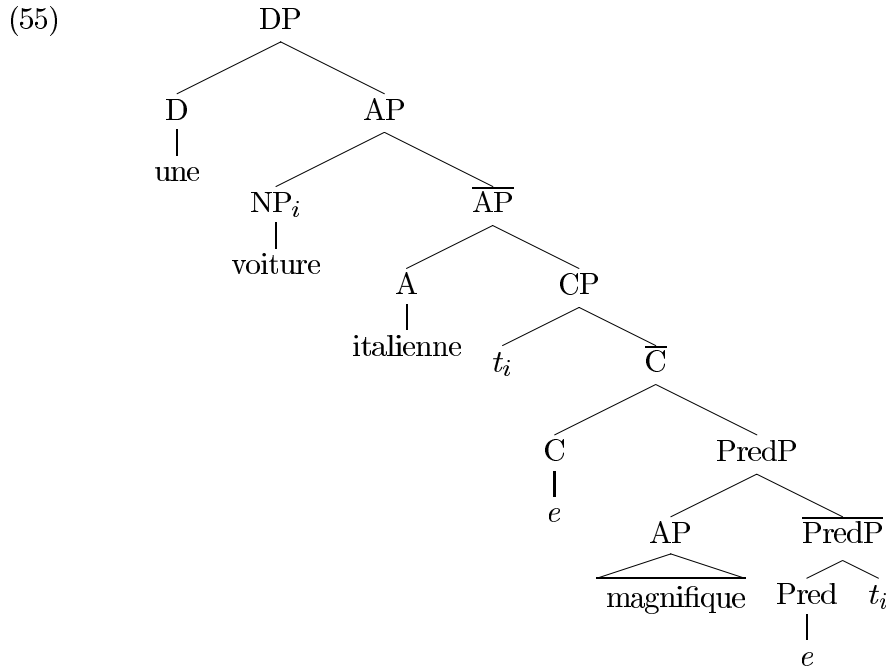
    Most importantly, my approach eliminates the DP-template in (51). The most unsatisfactory part of the account is the stage in which weak, subjective, and quantificational adjectives move up respectively into their "positions." Under the Minimalist approach, the derivation is carried out bottom-up. In utterances where there is no (for example) weak adjective, the claim that such a position exists amounts to a claim that some empty element has been inserted from the Numeration, after projecting the appropriate phrase (e.g., a WeakP). [Smit01] argued that this is a troublesome claim: under a strong understanding of bare phrase structure, a lexical head is the *only* source of structure. Therefore an empty adjective with no lexical properties is incapable of filling (i.e., generating) the WeakP when it is merged with its complement.
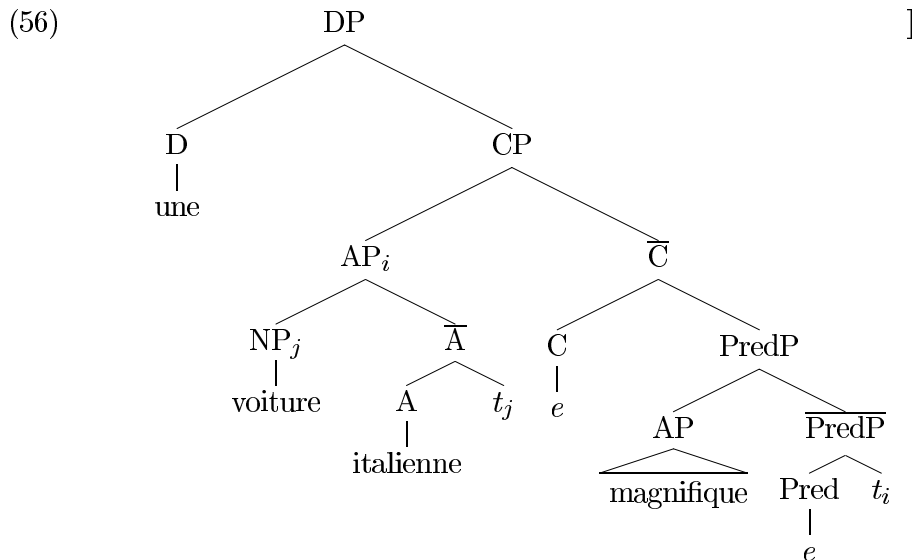
    First, consider the "snowballing" account of mirror-image ordering given by Laenzlinger:

(54)　a.　une voiture italienne magnifique
　　　　　a　　car　　　Italian　　beautiful
　　　　　'a beautiful Italian car'
　　　b.　une île　　verte splendide
　　　　　an　island green splendid
　　　　　'a splendid green island'

As previously mentioned, Cinque gave an account of such examples in which (at least) the rightmost adjective is predicative and hence not subject to ordering restrictions [Cinq94]. This account appears unproblematic if the distinction between predicative and attributive adjectives is based on structure and is therefore not inherent to the lexical item. Laenzlinger, working under the hypothesis that adjective lexemes are either predicative or non-predicative, argued for pied-piping of some adjectives with the NP through the DP. This proposal is untenable when the question of licensing is raised: why do some adjectives snowball (pied-pipe) with the noun phrase but not others? Maintaining Cinque's analysis that predicativeness explains mirror-image ordering, I will explain the facts in French without resorting to snowballing.
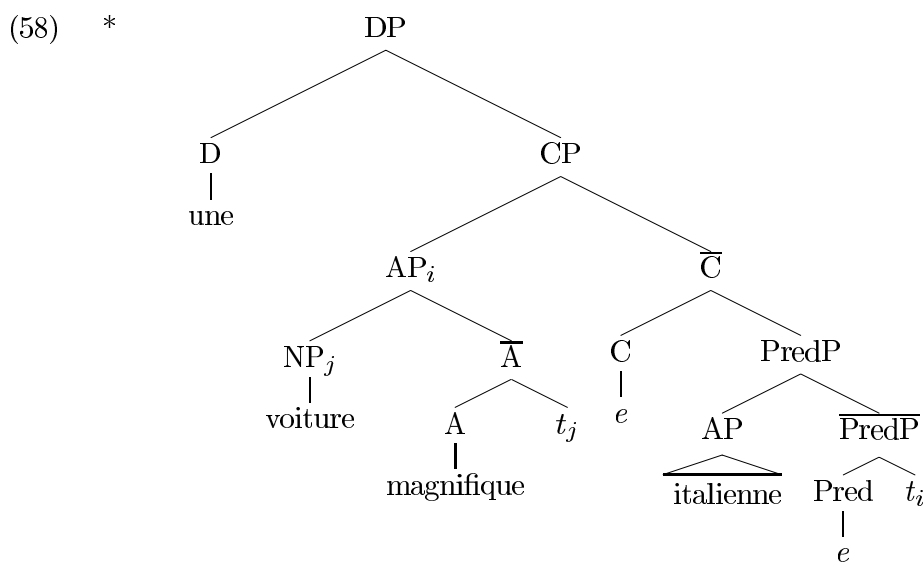
Suppose that in (54a), 'magnifique' is predicative and 'italienne' is attributive; the structure is one of the following (note that there is no snowballing in the second case, since the phrase in Comp(PredP) is attracted to Spec(CP), regardless of whether it is NP or AP, as here):

(55)

23

(56)

```
                        DP                                    ]
                   ╱         ╲
                  D            CP
                  │        ╱        ╲
                 une     AP_i          C̄
                      ╱      ╲      ╱      ╲
                    NP_j      Ā    C        PredP
                     │      ╱  ╲   │      ╱      ╲
                  voiture  A   t_j  e    AP        PredP‾
                           │              ╱‾‾╲    ╱    ╲
                        italienne     magnifique Pred   t_i
                                                  │
                                                  e
```

The following, however, is unacceptable:

(57)   * une voiture magnifique italienne

(58)   *

```
                        DP
                   ╱         ╲
                  D            CP
                  │        ╱        ╲
                 une     AP_i          C̄
                      ╱      ╲      ╱      ╲
                    NP_j      Ā    C        PredP
                     │      ╱  ╲   │      ╱      ╲
                  voiture  A   t_j  e    AP        PredP‾
                           │              ╱‾╲    ╱    ╲
                       magnifique     italienne Pred   t_i
                                                  │
                                                  e
```
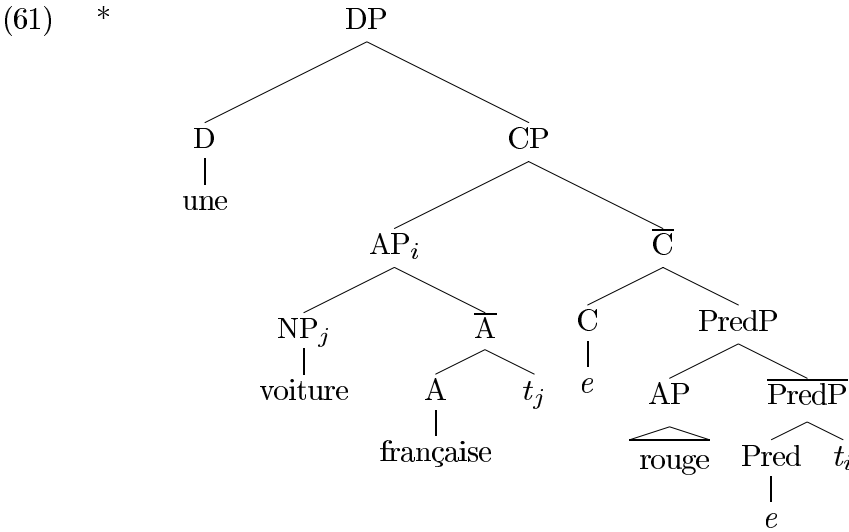
If the structure is as in (56) and (58), rather than as in (55), the ill-formedness can be explained. When 'italienne' merges into Spec(PredP), it must check its Φ-features with the NP. At this point, the AP has not moved and is in its base position inside the PredP. (Recall that French adjectives, including predicative adjectives, agree with the nouns they modify; the form 'italienne' is marked for feminine gender.) However, in French and English, there are more χ-features present on quality adjectives than on nationality adjectives (explaining the English order, "beautiful Italian car"). So, despite the fact that the NP has moved into Spec(AP), 'italienne' is blocked from accessing the NP. Perhaps this follows from some fact about the implementation of the Agree mechanism (e.g., it must "look" through the X^0 position when it seeks an element in Spec(XP)), or perhaps the χ-features do not move with the other features of the NP.

Consider next:

(59)   une voiture rouge française

(60)   * une voiture française rouge

In (59), the adjectives are ordered as expected; they are both attributive and the noun has moved cyclically through the Spec(AP) positions. It cannot be the case that fracçaise is predicative, since it would be blocked by 'rouge' for feature checking against the NP. In (60), we see that 'rouge' may not be predicative, either, though it is unclear why. The structure would be as follows:

(61)   *

$$
\begin{array}{c}
\text{DP} \\
\diagup \quad \diagdown \\
\text{D} \qquad \text{CP} \\
\text{une} \\
\text{AP}_i \qquad \overline{\text{C}} \\
\text{NP}_j \quad \overline{\text{A}} \qquad \text{C} \quad \text{PredP} \\
\text{voiture} \quad \text{A} \quad t_j \quad e \quad \text{AP} \quad \overline{\text{PredP}} \\
\text{française} \qquad \text{rouge} \quad \text{Pred} \quad t_i \\
e
\end{array}
$$

It is likely that predicative structures are only available to certain adjective types; this is clearly the case in English (see also (8)):

(62)   a.   * a man tall
        b. a man tall as he was mean

(63)   a.   * a house blue
        b.   ? a house blue with a greenish tint like Mom's sweater

"Heavier" adjective phrases tend to be seen in predicative constructions, though the exact definition of "heavy" is unclear. Tentatively, I will suggest that heaviness might have to do with phonological properties or, perhaps, the semantic-related χ-features I have proposed.

A bit more can now be said about mirror-image orderings, e.g., (9a), repeated here with an example involving a prenominal adjective:

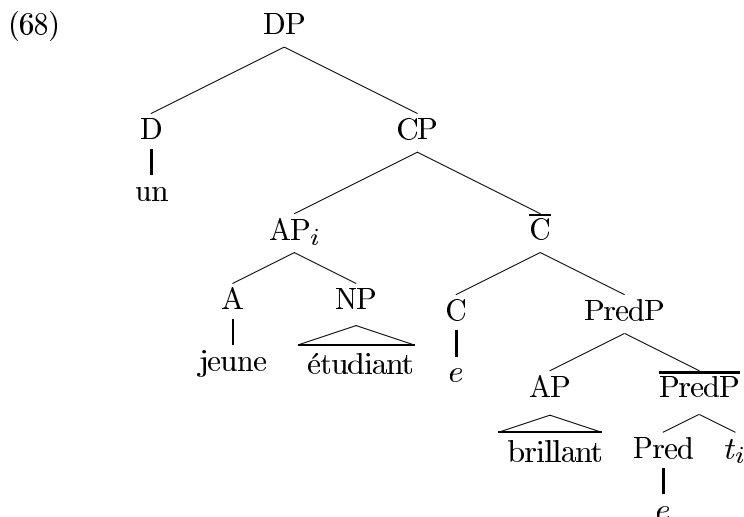(64)   un fruit orange énorme
        a   fruit orange huge

(65)   un jeune étudiant brillant
        a   young student   brilliant

(66)   a brilliant young student

Following Cinque, I have argued that, in (64), 'énorme' must be predicative. that would force an adjective to be predicative. In t As in (59), the adjective 'orange' cannot be predicative owing to its lightness, so that the reverse ordering will fail:

(67)   * un fruit énorme orange
           a   fruit huge   orange

In (65), we find that 'jeune' must not be predicative. Noting that 'jeune' is always prenominal in French (except perhaps when it is marked for stress), the explanation is the same, only the NP has not moved to Spec(AP) since 'jeune' has no EPP feature to attract it. The structure, when 'brillant' is predicative, is:

(68)

DP
- D | un
- CP
  - AP$_i$
    - A | jeune
    - NP | étudiant
  - $\overline{\text{C}}$
    - C | e
    - PredP
      - AP | brillant
      - $\overline{\text{PredP}}$
        - Pred | e
        - t_i

Note that, before AP$_i$ moves to Spec(CP), the arrangement of the adjectives matches that of English, so that the χ-features do not bring about blocking.

Finally, under my account, the derivation of weak, subjective, and quantificational adjective structures is no different from any other adjective structure, save the presence of additional features on the weak, subjective, or quantificational element. Hence these marked adjectives must be merged later (i.e., higher), to prevent blocking other adjectives from Φ-feature checking against the NP.

This explains also why 'brillant' in (65) cannot be attributive *and* precede 'jeune.' If 'jeune' has the "weakness" χ-feature, in addition to the features on 'brillant,' then it must be merged later than an attributive 'brillant' to prevent blocking, hence the earlier position. Further, because 'brillant' (an observably post-nominal adjective) has an EPP feature, it attracts the NP to its specifier. This gives the ordering observed. If 'brillant' is predicative (as in (68), then it is naturally postnominal in French. In English, 'young' has no weakness feature (and presumably lacks at least one of the χ-features of 'brilliant'), so the ordering is as in (66). Similarly, if we assume a French weakness feature, we need not claim that, in (64), 'énorme' is predicative, if 'orange' is weak. In this case, 'orange' maintains its EPP feature, so that despite its higher position than (attributive) 'énorme', the NP raises to precede it.

There is more work to do in accounting for the full set of observed phenomena in French (not to mention other languages I have not mentioned), including the matter of prepositional phrase modifiers in the DP. In particular, blocking by χ-features may be more complicated than this presentation, involving interaction with features having to do with weakness and quantification in ways I have not explored here.

Final Remarks

Adjective structures provide a unique look at the language faculty. They exhibit extraordinary cross-lingual variation in their syntactic variation with the nouns they modify, though they are subject to limitations that are eerily universal.

My analysis has given attributive adjectives status as heads resting between the NP and the DP. Further, I have drawn a clear structural distinction between attributive and predicative adjectives while maintaining that there is no lexical difference. Specifically, attributive adjectives are medial heads in the DP, and predicative adjectives rest inside of a PredP, the precise structure of which is likely to be language-specific. Finally, I have hypothesized that feature-checking is subject to interference on the basis of feature-type presence alone (and not solely feature-value mismatch). This analysis begins to give a unified explanation for ordering data in English and French, indirect modification and boundedness in Mandarin, and agreement variation in German. Further, the structures I have proposed are in accord with Kayne's Linear Correspondence Axiom, and the derivations that generate them respect the Minimalist approach to syntax.

Acknowledgements

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