FEATURE ATTRACTION AND CATEGORY MOVEMENT

by Brian Agbayani
reviewed by Jan-Wouter Zwart

Summary
by the author

1. The Split Movement Hypothesis

1.1. An asymmetry in Chomsky's (1995: Chapter 4) system

Chomsky (1993, 1994, 1995) has argued that movement is driven by the requirement of feature checking. Under this view, Chomsky (1995) proposes that since movement is driven by the requirement that some feature F be checked, then the minimal operation should raise only the feature F. Covert raising is restricted to feature raising, and overt raising involves "generalized pied-piping" of an entire category for PF convergence. Chomsky further suggests that movement of a category forms a separate chain (CH_{CAT}) from the chain formed by movement of the formal features (CH_{FF}). CH_{FF} is formed by the operation Attract F. CH_{CAT} is formed by raising of a category carried along by generalized pied-piping.

This approach sets up an overt/covert asymmetry with respect to movement. Movement in covert syntax would involve Attract F only, whereas movement in overt syntax would involve Attract F plus category movement. Furthermore, Chomsky suggests that covert movement is simply movement (adjunction) of formal features to a head.

(1)

```
        XP
       /  \
      X    YP
     /
    X
  [α...FF...]
```

However, there appears to be an assumption that in overt syntax the formal features remain as part of the category which pied-pipes. The unchecked formal feature(s) of the head X enters into a checking relation with the relevant formal feature(s) of the moved category through the Spec-head relation.

(2)

```
         XP
        /  \
       X    X'
  [FF(α)]  / \
          X   YP
       [α...FF...]  t_α
```

This approach sets up a heterogeneous system for feature checking, since distinct structural configurations are necessary for feature checking in overt and covert syntax.

I suggest that only the head-adjunction structure in (1) is relevant for feature checking. This implies that movement of the category to a Spec position in overt syntax has nothing to do with feature checking. Hence, we can dispense with the Spec-head agreement mechanism, thereby simplifying the checking theory.

1.2. Hypothesis

This simplification of the checking theory sets up a "split" treatment of movement in which a category and its formal features move to distinct structural positions.

Attract F adjoins a set of formal features to a head. A second operation, Move Category, adjoins a category to an XP. Following Kayne (1994) and Fukui & Saito (1998), movement into Spec involves XP-adjunction, forming a two-segment category (May 1985). This approach is called the **Split Movement Hypothesis**.

2. Attract F without Move Category: the Vacuous Movement Hypothesis

It has been noticed that in English local overt *wh*-movement takes place except for subjects (George 1980, Chomsky 1986). This asymmetry has been dubbed the Vacuous Movement Hypothesis (VMH). There is considerable evidence that a *wh*-subject does not move locally to SpecCP. However, the fact that overt *wh*-movement in English involves feature checking with C implies that even in the case of *wh*-subjects, feature checking still occurs.

Let us consider how the VMH is captured under the Split Movement Hypothesis. At PF, a set of formal features must be part of a category which also contains phonological features, otherwise PF is presented with a defective output. As a condition on the "recombination" of features, (3a) holds prior to Spell-Out.

(3)
a. In order for a set of formal features and a category to be combined, they must be adjacent.
b. X and Y are adjacent if no elements that are visible at the interface intervene between X and Y.

Elements that are assumed to be visible at the PF interface include phonological features and XP and X° level categories, but not segments or X' level categories.

A set of formal features and a category that have been separated by the application of Attract F may be recombined either through becoming adjacent as a result of category movement or by virtue of being in a configuration in which the category and the formal features are adjacent without the application of Move Category. The latter is the case of the VMH. In (4), the set of formal features adjoined to C and the category of the subject *wh*-phrase adjoined to TP are already adjacent, thus category movement need not apply to recombine the category and its formal features.

(4)

```
           CP
          /  \
         C    TP
   [FF(wh-subj)] / \
              wh-subj TP
```

Since category movement need not apply, I propose on economy grounds that it does not; raising of the category would introduce a superfluous step in the derivation. If this characterization of the VMH is correct, then it offers evidence in favor of the Split Movement approach.

3. Attract F vs. Move Category: different locality restrictions

3.1. Attract F is constrained by the A-over-A Principle

Following Fukui (1997), I argue that Attract F revives the A-over-A Principle (Chomsky 1964, 1968, 1973; Bresnan 1976) in a form that is sensitive to relevant features. The MLC is eliminated from the definition of Attract F and the feature-based A-over-A Principle is introduced as an independent constraint.

(5) ATTRACT F
K attracts F iff F is a feature that can enter into a checking relation with a sublabel of K.

(6) The A-over-A Principle
If a transformation is to apply to a phrase-marker Σ which contains the following configuration, where A ranges over a set of features:

$$...[_A...[_{A_2}...]...]...$$

it must apply to A_1.

The feature-based A-over-A Principle leads to an analysis of *wh*-island effects that is amenable to the Split Movement approach.

(7) ??Which book$_i$ do you wonder [where$_j$ John read t_i t_j]?

Under this approach, a *wh*-island would involve adjunction of the formal features of a *wh*-phrase directly to the intermediate C via Attract F. Since the formal features of the *wh*-element are already adjoined to C, as part of an "extended head" these formal features (crucially, the [+wh] feature) will project with the other features of C to the XP level.

(8)

Wh-Island

```
              K=CP
             /    \
       [+wh] C     CP [F_1=[+wh]]
             / \
           wh_1  C
                / \
      F_1=[+wh] C   CP
                   / \
                  F_2=[+wh]
                     \
                    wh_2
```

In (8), the matrix [+wh] C cannot attract F_2 of wh_2 because wh_2 is dominated by the intermediate CP which obtains wh_2 through projection of the formal features adjoined to its head, forming an A-over-A configuration.

Chomsky's (1995) Attract F theory does not account for Complex NP Constraint/CNPC effects. However, the feature-based A-over-A Principle extends to these cases.

(9)
a. ??[Who$_i$ did they believe [$_{DP/NP}$ the claim [$_{CP}$ that John killed t_i]]]? [CNPC: noun-complement case]
b. *[Who$_i$ did he read [$_{DP/NP}$ the book [$_{CP}$ that interested t_i]]]? [CNPC: relative clause case]

In both the noun-complement case (9a) and relative clause case (9b), *who*, itself a DP/NP, is extracted out of a more inclusive DP/NP, making this analysis much like the classical A-over-A account.

However, CED effects are not amenable to an Attract F/A-over-A analysis. I propose that the locality of category movement accounts for the CED effects.

3.2. Move Category is constrained by Shortest Move

I propose that Move Category obeys Shortest Move, roughly stated in (10), adapted from Takahashi (1994).

(10)
Movement of α must proceed by adjoining to every XP dominating α.

Adjunction is defined in (11).

(11)
α is adjoined to β $=_{def}$ neither α nor β dominates the other and β does not exclude α.
Fukui & Saito 1998

In light of (11), consider the configuration in (12):

(12)

```
        XP
       /  \
      YP   XP
     /  \
    ZP   YP
```

According to (11), ZP is adjoined simultaneously to both XP and YP because XP and YP do not dominate ZP and vice versa, and neither YP nor XP excludes ZP. This indeterminacy of adjunction site is ruled out by the condition on operation in (13).

(13)
An adjunction site must be unique.

This theory derives the Subject Condition (14) and Adjunct Condition (15) effects.

(14)
a. *Who$_i$ did [a picture of t_i] please John?
b. *Who$_i$ did he say that [for Bill to marry t_i] was a surprise?

(15)
*Who$_i$ did John go home [because he saw t_i]?

In overt syntax, the category will always be required to

Review
by Jan-Wouter Zwart

1. Introduction

The present stage of generative grammar is characterized by a quick succession of ideas and proposals regarding the most basic elements of grammatical theory: phrase structure, locality, the division of labor among syntax, morphology, and phonology, and – particularly relevant to the work under review here – the nature of movement. Chomsky's (1995: 262) proposal that movement is essentially feature movement ("the minimal operation . . . should raise just the feature F") was quickly overhauled by his (1998: 34) conjecture 'that features cannot move or be attracted'. In both cases, the considerations are largely conceptual. If movement is attraction of features, why move more than these features? On the other hand, what evidence is there that features move by themselves? Doesn't some 'integrity requirement' ensure that movement of lexical or phrasal categories is really the default case? Preferences may go either way.

Meanwhile, there has been hardly time to assess the consequences of the feature movement hypothesis. The very suggestion that movement may involve just features opens up a range of possibilities, barely considered so far. Thus, the elements moving may range from a. to e. in the "pied-piping scale" in (1):

(1)
a. a single feature ('covert' movement)
b. all features of a certain class (e.g. all formal features, cf. Chomsky 1995: 265)
c. all features of a lexical item, i.e. an $X°$ category (yielding traditional head movement)
d. the phrase projected by the lexical item X containing the relevant feature (yielding traditional XP-movement)
e. a phrase YP containing the phrase projected by the lexical item X containing the relevant feature, yielding traditional pied piping (cf. Koster 1999).

It seems unlikely that all movement can be reduced to a single type on the scale. In Chomsky's (1995: 262) proposal, bare output conditions determine the amount of pied piping in each movement operation. (The shift from the earlier to the later proposal implies a progression of the pied-piping scale, excluding types (1a) and (1b) as basic movement types.) Alternatively, the selection of a particular movement type may be a matter of parametric variation, an idea explored by Koster (1999) to account for the word order differences between English and Dutch.

2. Features and Categories

A distinction between 'features' and 'categories' is at the basis of the Split Movement Hypothesis. The former move as heads, the latter as phrases. Technically, both heads and phrases are bundles of features. Therefore, category movement is also some kind of feature movement, and the 'Split Movement Hypothesis implies that some features move to heads, and others move to specifier positions (both operations involve adjunction, in Agbayani's analysis). But if feature movement may target specifier positions, why split phrasal movement in the first place?

Agbayani's answer would be that a head adjunction structure is the only configuration in which feature checking may take place. Therefore, feature attraction for feature checking purposes must involve adjunction to the attracting functional head, regardless whether the feature attracted resides in a head or in a phrase. XP-movement (feature movement to Spec), then, is part of a repair strategy, enforced by PF-requirements, in conjunction with some version of the uniformity hypothesis, I presume (forcing feature bundles that represent phrases to adjoin to phrases rather than heads).

The idea that features can only be checked through head adjunction is itself a hypothesis. The idea is motivated by the desire to create a single uniform format for feature checking. The head adjunction structure (3) yields the most basic structural relation, sisterhood:

(3)
```
     X°
   Y°  X°
```

The Specifier-Head configuration (4) involves a more complex relation, which should therefore be eliminated in a minimalist checking theory:

(2)
```
       YP
  CAT(XP)  YP
        F(XP)  Y′
             Y°
```

Since the repair strategy is enforced by a requirement of PF-convergence (Chomsky 1995: 263), the desired effect must be that the category (CAT(XP)) and its formal feature(s) (F(XP)) are reunited in a single node that can be processed at PF. I recall Chomsky in his 1995 MIT Fall term class lectures trying to achieve that effect by further movement of F(XP) in (2) to CAT(XP) in SpecYP, and I suspect that the blatant economy problems connected with such a derivation constitute the subtext of his (1998: 34) footnote 73 ("The extension of Move and Attract] to features raises difficulties, not insuperable but better avoided, as seems possible.").

Agbayani, on the other hand, bites the bullet and proposes that (2) is the end result of phrasal movement, assuming that CAT(XP) and F(XP) are sufficiently close to each other to make superfluous further operations aiming at reuniting the two. A pleasant surprise in this work, at least to me, is that the distinction between feature movement and category movement is immediately put to work in an analysis of various locality phenomena, now reduced to differences in locality conditions on the two types of movement. If this leads to a renewed interest in locality theory – a curiously neglected area in much minimalist work – Agbayani's dissertation will remain a point of reference in these fast moving times.

In the remainder of this review I would like to discuss a number of issues connected with the Split Movement Hypothesis. This is the point to express my admiration for Brian Agbayani's exemplary presentation of the hypothesis and its consequences.

through (1c)), since feature movement is taken to be head movement (Chomsky 1995: 271). With head movement, the reduction to feature movement is rather straightforward. Head movement can be analyzed as a movement of type (1c), or it can be reanalyzed as a two step process, the first step a movement of type (1a) or (1b), and the second step [a movement of type (1c), now] associated with the head hosting the attracted feature:

(4)
```
        XP
   XP₂       X°
          YP    X°
             Y°
```

(5)
```
       Agr₂
   T₂       Agr₁
 F(V)  T₁
```

There is, however, another way of achieving a minimalist theory of feature checking. That would be to capitalize on the possibility of feature percolation, i.e., the theoretical possibility that features of a head α are also present on the projection(s) of α. In (4), assuming feature percolation from $X°$ to XP, YP and XP_1 are in the same basic sisterhood configuration needed for feature checking as are $Y°$ and $X°$ in (3). From this perspective, there is no asymmetry between feature checking through head adjunction and feature checking through Specifier-Head agreement.

The minimalist question to ask, then, is do we really need feature percolation, or is it just an artificiality of the theory?

There appears to be little room for discussion here. Feature percolation is inherent in the notion 'projection' – if two terms α and β merge, the resulting projection γ shares features with α, β, or both, and its feature content is never independent of α and/or β (cf. Chomsky 1995: 244 f.). When α is a head and β is not, the resulting projection appears to derive its phrase level status (nonhead) from β and its features from α (Zwart 1992; 1997: 175). When both α and β are heads, the resulting projection is arguably a unification of the features of α and β (Zwart 1997: 178). Thus, adjunction of (the features of) V to T, yielding T, and subsequent adjunction of T (the V-T complex) to Agr (or any other head) does not preclude feature checking between the features of V and Agr. If feature checking always involves sisterhood, it must be that the features of V are represented on T as a function of the head adjunction of V to T.

(Assuming that morphology takes place after syntax, the same unification of features is needed to make sure that Morphology interprets a complex head resulting from adjunction of V to C – e.g. in inversion constructions – as a verb and not as a complementizer.)

It seems, then, that feature percolation is everywhere. It is needed to ensure sisterhood between attractor and attractee in complex head adjunction structures like (5), hence it can also be employed to guarantee sisterhood between attractor (the head, or, rather, the projection of the head) and attractee (the specifier) in 'Specifier-Head' agreement configurations like (4). For future reference, the following may serve as a definition of the effect of feature percolation:

(6)   *The Feature Percolation Effect*
If α results from merger involving β and α shares a feature φ with β, α behaves as if it were β for any operations involving φ

Thus, in (5), T_2 behaves as if it were F(v) and Agr_1, and feature checking between F(v) and Agr_1 may take place via the sisterhood configuration of T_2 and Agr_1. Likewise, in (4), XP_1 behaves as if it were $X°$, and feature checking between YP and $X°$ may take place via the sisterhood configuration of YP and XP_1.

The feature percolation effect (6) may also capture standard pied-piping effects such as (7), if the conditions under which feature sharing takes place can be made precise:

(7)
[The capital of which European country] did you say you visited?

To return to the Split Movement Hypothesis, if percolation is pervasive, and feature checking may take place under sisterhood even in 'Specifier-Head' configurations, we could move the feature bundle constituting a phrase to the relevant specifier position as a whole, without splitting off the attracted features first and directing how the moved feature and the moved category...

The theory is able to derive these locality properties without appealing to extra devices such as Government or L-marking (cf. Huang 1982, Chomsky 1986). The new "split" theory of locality reflects the notion that UG makes both Attract and Move available.

(16)
```
        TP
   who       TP
          CP
       go home   CP
             who    VP
                  VP
        for Bill to marry t
```

(17)
```
   who  was a surprise
   go home    TP
          CP
      who   XP
           XP
      because he saw t
```

3. Adjacency

Another question connected with the Split Movement Hypothesis that aroused my interest is the question how the moved feature and the moved category...

adjoin to an adjoined phrase whenever there is extraction out of a subject or an adjunct. However, adjunction to an adjoined phrase is blocked by (13). Furthermore, if movement of a category skips adjunction to the adjoined phrase, then Shortest Move is violated.

In the meantime, the empirical consequences of the feature movement hypothesis have hardly been tested, particularly in the domain of phrasal movement. Here, Brian Agbayani's clear and elegant dissertation fills a major gap.

Movement of phrases seems hard to reduce to feature movement (i.e, movement of the types (1a)

are ultimately reunited. I still have this painful memory of Chomsky in his class lectures trying to reunite the two in a noneconomical fashion, so naturally I wondered how Agbayani would pull it off. His solution, that the category and its features are sufficiently close to each other in the configuration in (2), is only partly satisfactory. I find, since it relies crucially on the obscure notion of adjacency.

Again, the minimalist question to ask is, does adjacency have a place in the theory of grammar? Many cases of adjacency can be reduced to sisterhood, a nonsuspect structural term. Thus, the adjacency effect of subject and verb in declarative main clauses in French and Dutch, and of *wh*-phrase and verb in *wh*-questions in Dutch and English, and more generally all 'verb second' phenomena, can be described as Specifier-Head configurations (ultimately as sisterhood configurations.) Similarly, the adjacency effect of a verb and its noun phrase complement in English can be described as the sisterhood relation between a head and its complement. The place of the adjacency relation in the theory of grammar can never be motivated by these kinds of phenomena. Adjacency becomes interesting when no further reduction to Spec-Head or Head-Complement is possible, for instance where adjuncts are involved. (Unfortunately, Agbayani, p. 41, follows Bobaljik 1996 in assuming that adjuncts do not disrupt adjacency.) But adjacency as employed by Agbayani involves just the relation between a head and its specifier, and the relation between a head and the specifier of its complement:

(8) Adjacency

```
        XP
       /  \
      YP    XP
           /  \
          X°   XP
              /  \
             YP   ZP
```
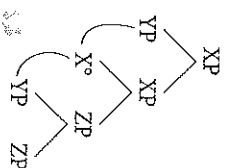
Both relations are reducible to sisterhood (especially since intervening adjuncts do not count, by stipulation).

In (8), the positions marked *YP* are potential targets for movement of a category the features of which have been adjoined to X°. Inclusion of the lower *YP* is instrumental in Agbayani's major argument for separating feature movement from category movement, viz. his analysis of subject questions like (9):

(9)
a. Who left?
b. *Who did leave?

Agbayani adopts the Vacuous Movement Hypothesis (VMH) of George (1980), also supported in Chomsky (1986), according to which *who* in (9a) remains in the structural subject position (here taken to be SpecTP). In Agbayani's version of the VMH, the *wh*-features of *who* do move to C, yielding the configuration in (10):

(10)
```
        CP
       /  \
      YP    CP
           /  \
          C°    CP
               /  \
              C°    ZP
                    |
                    TP
     F(who)  C°  CAT(who)   TP
                           TP
```
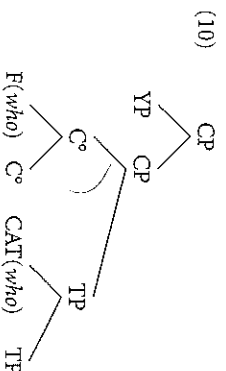
In (10), F(*who*) and CAT(*who*) are adjacent, and further movement of CAT(*who*) is not needed (and, hence, excluded). (Technically speaking, F(*who*) and CAT(*who*) are adjacent in (10) because no phrase structure nodes that are visible at PF intervene between F(*who*) and CAT(*who*); Agbayani, p. 47, assumes that only X° and XP but not X' are visible in this sense; he also assumes that intervention requires **dominance**, so that **segments** eliminating C° and TP in (10) as intervening elements – in the sense of Chomsky 1986 – never intervene, blocking adjacency.)

This new approach to the vacuous movement facts makes an interesting prediction. It should be possible to insert an adverb like *probably* noncyclically between CP and TP, without disrupting adjacency (recall that Agbayani follows Bobaljik 1996 in assuming that an adverb never disrupts adjacency). The resulting sentence, however, is not an acceptable subject question:

(11)
*Probably who left?

Better, then, to drop the assumption that adverbs do not count for adjacency (which doesn't appear to play a significant role in the thesis anyway). This would force category movement to SpecCP of *who* precisely in cases like (11), where C° and SpecTP are separated by the adverb:

(12)
$[_{CP}$ C°[+wh] $[_{TP}$ *probably* $[_{TP}$ *who* T° …]]

with movement labeled F-movement and CAT-movement.
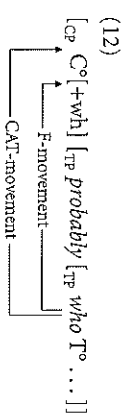
The grammatical question (13) results:

(13)
Who probably left?

But now another problem arises. The VMH is supported by contrasting facts like (14), where the embedded clause in (14a) doesn't involve movement of *who* to SpecCP, leaving SpecCP open as an intermediate landing site for the relative operator OP:

(14)
a. ?This is a paper OP$_i$ that we need to find someone $[_{CP}$ t$_i$ C° $[_{TP}$ *who* understands t$_i$]]
b. *This is a paper OP$_i$ that we need to find someone $[_{CP}$ OP$_i$ that we can intimidate t$_i$ with t$_i$]]

If (13) involves category movement to SpecCP, adding an adverb to (14a) would have to turn the sentence ungrammatical. That is, (15) should be more like (14a):

(15)
This is a paper that we need to find someone who probably understands

The sentence in (16), without category movement of *who*, should be more like (14a) than like (14b):

(16)
This is a paper that we need to find someone probably who understands

I believe that neither prediction comes true. This makes me wonder whether Agbayani's interesting approach to the VMH facts will be successful in the end.

Agbayani's analysis of (9) also leaves me wondering about how *do*-insertion is regulated. Agbayani (p. 40) follows Lasnik (1994) in assuming that *do* is inserted whenever T and V are not adjacent – in the sense discussed above; cf. also Halle & Marantz (1993: 134). The original interpretation of the VMH holds that a question like (9a) is just an IP (TP), so that T and V are adjacent and no *do*-insertion is called for. Object questions like (17), on the other hand, take T across the subject to C, so that adjacency of T and V no longer holds:

(17)
a. Who did you see?
b. $[_{CP}$ who$_i$ T$_j$-C° $[_{TP}$ you t$_j$ $[_{VP}$ see t$_i$]]]

Therefore, the derivation of (9a) must not involve T-to-C movement, even though a root clause [+wh] C° generally does trigger T-to-C movement in English. In Agbayani's story, it would be very nice if T-to-C movement were to be a function of category movement, by a 'verb second requirement' if you will, but it is not clear to me how that would be more than a reformulation of the problem.

All in all, I am not convinced that adjacency does anything (*pace* Bobaljik 1996), which brings us back to

the question of how F(xp) and CAT(xp) in (2) can be reunited. I see two possibilities: either feature movement can be phrasal movement (making split movement superfluous), or feature movement *stricto sensu* does not exist (as Chomsky 1998 proposes, with the concomitant relaxation of locality requirements on the relation between attractor, or probe, and attractee, or 'goal'). But I have been made to regret my lack of imagination in the past, so we will see how things develop.

4. Locality

Feature movement and category movement are subject to different locality conditions, expressed in the feature based A-over-A principle' (Fukui 1997) for feature movement, and a version of the Minimal Link Condition (MLC) for category movement.

The MLC employed here is not of the 'relativized minimality' type, but is in fact more reminiscent of the *Barriers* framework (Chomsky 1986), in exploiting the 'segmentation' effect of adjunction:

(19) *Minimal Link Condition*
Movement of α proceeds by adjoining α to every XP dominating α

Movement out of a complement now creates different configurations from movement out of an adjunct or subject, since adjuncts and subjects are already adjuncts (recall that specifiers are taken to be adjuncts). This circumstance yields an explanation for subject and adjunct island effects (the Condition on Extraction Domains (CED) facts of Huang 1982), as adjunction to an adjunct is disallowed (see Agbayani's summary above). Other effects, notably *wh*-island effects and Complex NP Constraint effects, are not described as violations of the MLC but as violations of the feature based A-over-A principle. Hence, the former set of facts involves nonlocal category movement and the latter involves nonlocal feature movement.

This is an interesting move away from the unification attempts that informed much of the research on locality since Ross (1967). It may well turn out to be a valuable contribution to locality theory. It is not clear that a total unification of locality conditions is feasible (*pace* Koster 1987), as the discovery of different locality conditions for A- and A'-movement bears out.

Agbayani's approach seems motivated by the desire "to account for the locality effects under Minimalist assumptions without recourse to the Subjacency Condition and the notion of Government" (p. 81). This quote follows directly upon a discussion of the *Barriers* attempt at unifying the two sets of locality effects under discussion here (*wh*/CNPC vs. CED). The unification is achieved by describing all locality effects in terms of the number of barriers crossed, where the definition of 'barrier' involves the notion of L-marking, which is itself defined in terms of (theta-)government – this is where the minimalist red flag goes up. Unfortunately, the discussion then jumps to the standard mode of describing locality effects in the minimalist framework, in terms of a 'shortest move' requirement, without attempting to capture the *Barriers* unification in minimalistically more acceptable terms.

I still find the idea that CED effects and other island effects are due to a violation of the same type of locality factor attractive. Surely the notion of L-marking – and, hence, the notion 'barrier' – may be defined without making use of the offensive term 'government' (e.g., as a relation of sisterhood to an L-related category). The split in locality conditions that Agbayani proposes appears to be motivated by the circumstance that only **part** of the locality effects can be described in terms of 'shortest move' (p. 82). Another reaction to that state of affairs would be that the 'shortest move' idea is a step back, rather than a step forward (cf. Zwart 1996).

Interestingly, the feature based A-over-A principle makes crucial use of the notion of percolation, as discussed in the author's summary above (section 3.1). Thus, the A-over-A principle states that the attractor (the probe) doesn't look any further than the first XP containing the attractee (the goal). The way this is formulated, the relevant XP shares the features of the attractee, as a function of feature 'projection' (=percolation). This undersores the point made earlier, namely that feature percolation is an unquestionable fact of grammar, which may be exploited without cost

to redefine the Specifier-Head agreement relation as a sisterhood relation.

5. Conclusion

In the above, I could address but a limited number of aspects of the Split Movement Hypothesis. I certainly haven't done justice to the locality part, which takes up almost half of the dissertation. Let me conclude by recommending Agbayani's dissertation as an exemplary demonstration of the potential of applying new technology to age-old problems.

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A CONSTRAINT-BASED ACCOUNT OF SYLLABLE ONSETS: EVIDENCE FROM DEVELOPING SYSTEMS

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Summary by the author

1. Introduction

This dissertation focuses on the production and representation of word-initial clusters in developing systems with an appeal to Optimality Theory (Prince & Smolensky 1993). Substitution, reduction, epenthesis, and coalescence patterns are described based on data from children with phonological disorders (aged 3 to 7 years).

External evidence of cluster production, such as data from developing systems, contributes to the understanding of some cluster phenomena that are problematic theoretically due to ambiguities or asymmetries in the target system. Furthermore, the explanatory power of Optimality Theory is tested in its application to developing systems and to problematic data.

2. Problematic clusters: /s/ clusters and consonant + /y/ sequences

The /s/ clusters are theoretically problematic in English for several reasons. The occurrence of /s + stop clusters seems to violate the universal Sonority Sequencing Principle, which governs what are possible syllable onsets in a given language. Furthermore, /s/ clusters in general are known to have an unusual and asymmetrical patterning with respect to the rest of the phonology. For example, constraints against homorganic complex onsets prevent the sequences */pw-/, */fw-/, */tl-/ from occurring, yet the sequences /sl-/, /sn-/, /st-/ may occur. Additionally, /s/ is the only segment that may be followed by a nasal in word-initial clusters.

While the standard analysis of consonant clusters assumes that the two segments comprise a branching onset, as in (1), some have suggested that the /s/ in these clusters is not really part of the onset, but is rather an adjunct to the syllable, as in (2) (e.g. Steriade 1988; Davis 1990; Giegerich 1992; Kenstowicz 1994). Still others have assumed the /s/ clusters comprise a single complex segment similar to an affricate, as in (3) (e.g. Menyuk 1972; Barton, Miller & Macken 1980; Selkirk 1982; Kim 1984).
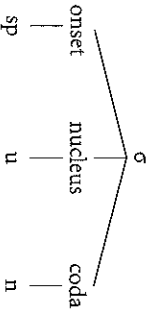
(1)
Representation of *spoon* with /sp-/ as a complex vowel
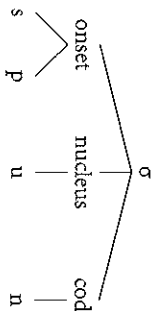
(2)
Representation of *spoon* with /s/ as an adjunct to the syllable
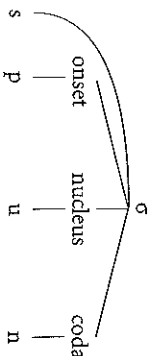
(3)
Representation of *spoon* with /sp-/ as a complex segment

Linguists have argued for many years over the asymmetry in the patterning of the glides /w/ and /y/ in consonant + glide sequences in English (e.g. Chomsky & Halle 1968; Clements & Keyser 1983; Borowsky 1986; Halle & Mohanan 1985; Shattuck-Hufnagel 1986; Anderson 1986, 1988; Giegerich 1992; Harris 1994; Davis & Hammond 1995). While consonant + /w/ sequences (such as /kw-/ in *quit*) are generally assumed to pattern as complex onsets as in (1) above, the status of consonant + /y/ sequences (such as /ky-/ in *cute*) is questionable for several reasons. Constraints against homorganicity referred to above also apply to the sequences */py-/, */ky-/, */dy-/, and */ny-/, suggesting these sequences are complex onsets. However, there is evidence that suggests that /y/ is not part of the onset, but is rather part of a complex nucleus instead, as in (4).

(4)
Representation of *cute* with /y/ as part of a complex nucleus
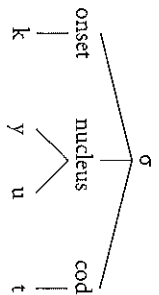
First, while onsets in English typically cannot consist of two sonorants (such as */mr-/, */ml-/, */mw-/, /my-/ sequences may occur (as in *mute* and *music*). Second, while no phonotactic constraints hold between an onset and a following vowel, consonant + /y/ sequences may only be followed by the vowel /u/. Third, while no voiced fricatives may be followed by a sonorant in onsets (hence, */vr-/, */zr-/, */vl-/), /vy-/ sequences do occur (as in *view*).

While various accounts have been proposed for both the consonant + /y/ sequences and the /s/ clusters, the structural representation of these clusters continues to be debated. This dissertation considers the status of these clusters by appealing to developmental data. Children acquiring consonant clusters tend to pass through a stage where target clusters are produced incorrectly by means of substitution, reduction, epenthesis, or coalescence. These incorrect productions allow us to better understand children's underlying phonological knowledge about those target clusters.

3. Asymmetrical cluster development

The chapters in Section II of the dissertation provide an overview and background of these various accounts of word-initial consonant clusters in both developing and fully-developed systems, with crucial reference to English. This section also provides an overview of the Optimality Theoretic framework that is adopted, namely correspondence theory, as proposed by McCarthy & Prince (1995), by applying it to typical and straightforward examples of children's productions of target clusters. It is demonstrated that relative rankings of constraints such as *COMPLEX, MAX, DEP and IDENT[F] can provide a coherent account of children's production patterns.

3.1. Subject 24: Null onsets and the dynamic representation of clusters

Subject 24 shows the unusual pattern of reducing some obstruent + sonorant clusters to null onsets, while other clusters are reduced to obstruent singletons. At a second point in time, the asymmetry changes: some clusters are reduced to the obstruent singletons, others are reduced to the sonorant singleton, and still others are reduced to null. At a third point in time, some clusters are realized correctly while others are still being reduced to null. Based on the behavior of the particular consonant clusters in this child's phonology, it is argued that all clusters pattern as complex segments (as in (3)) at first, and then later the representation of certain clusters change such that only the /s/ + stop and /s/ + nasal clusters are represented as complex segments.

3.2. Subject 2: /s/ clusters as adjunct clusters

Subject 2 shows an asymmetry between target /s/ clusters and other target clusters in his productions. At the first point in time, this asymmetry is obscured by the nonoccurrence of /s/ in word-initial position, whether as a singleton or in a cluster. However, at the second point in time, the child correctly produces all target /s/ clusters correctly (including /s/ + sonorant and /s/ + stop clusters), while all other target consonant clusters, including other fricative clusters, are reduced to singletons. It is argued that, for this child, all /s/ clusters are surfacing with /s/ as an adjunct to the syllable, rather than part of the onset, as in (2).