1. Introduction
In the Minimalist Program (Chomsky 1995), syntactic movement is triggered by a requirement that the computational system eliminate features that are uninterpretable at the relevant interface. Once we understand which elements move, it is just an exercise to determine which features might be responsible for the movement for which we have independent evidence. Looking at the system that is eventually created, however, in a system of features, one is led to ask certain questions about the typology of movement. In this paper, I examine asymmetries that arise in the system as it stands and ask whether the asymmetries are derivable or whether they are an artifact of the languages that are commonly studied. In this context, I argue that there are languages that show an asymmetry that is the opposite of the one we find in English and suggest that, in fact, these asymmetries should be built into the larger view of movement, thereby creating a language typology. Further, through an investigation of both types of asymmetry we can learn more about the details of movement.

2. Features and Movement Asymmetries
In order to set up a context in which to study movement asymmetries, I review briefly an early view of feature-triggered movement. As we can see in the structures below, a functional category such as T is merged into the structure with uninterpretable features, such as D and V, which must be eliminated before the derivation is sent to either interface. These features probe the structure to which they have been merged. The D-feature seeks an element with an interpretable D-feature and the V-feature seeks an element with an interpretable V-feature. In the first step, (1a), the features probe the structure; in the second step (if, perhaps, a further feature such as EPP forces movement), (1b), a DP will move to Spec, TP, and a V will undergo head movement and adjoin to T.
Observationally we know that DPs move and Vs move. However, it is not clear, given the features, why this is so—why the D-feature targets a maximal projection and the V-feature targets a head. Chomsky (2001, 38) notes this asymmetry.

It has always been taken for granted that the strong V-feature is satisfied by V-raising to T (French vs. English), not VP raising to SPEC-T; and the strong NOMINAL-feature by raising of the nominal to SPEC-T (EPP), not raising of its head to T. But the theoretical apparatus provides no obvious basis for this choice. The same is true of raising to C and D. In standard cases, T adjoins to C, and an XP (say, a WH-phrase) raises to SPEC-C, instead of the WH-head adjoining to C while TP raises to SPEC-C. And N raises to D, not NP to Spec-D.

Before investigating this asymmetry further, I point out two other asymmetries that exist between XP movement and X-movement.

### 2.1 Head Movement and Maximal Projection Movement

We have seen above that different features target different types of categories—heads versus maximal projections. There are other asymmetries that also show up with respect to head versus maximal projection movement. One is that head movement is typically seen to move a lexical (as opposed to functional) head up through the heads of its extended projection (Grimshaw 2000). Maximal projection movement, on the other hand, usually moves elements that are in specifier positions along this extended projection. We can see this distinction in (2) below. A head V will move through the functional heads in its extended projection (shown in [2] within the box), while XP movement would normally target the DPs which appear in satellite positions along the extended projections (shown in [2] outside the box).
Another asymmetry that we find relates not so much to what moves or where it moves to, but rather how it moves. XP movement typically moves cyclically from Spec position to Spec position, but the form of the element that moves does not change.¹ No material is accumulated through the movement. This is very different for head movement, which typically picks up material through its cyclic movement through other heads. This is shown below, where a DP will typically move up a tree without changing its shape, while a V will pick up inflectional morphology. For want of better terminology, I call the effect of the first type of movement, illustrated in (3), rolling stone, since no material is gathered, and the effect of the second type of movement, illustrated in (4), snowball.
Part I: Clausal Architecture

(3) Rolling-Stone Effect


(4) Snowball Effect

[Diagram of a grammar tree with labels: TP, DP, T, ModP, Mod', Mod, Asp, Mod, Asp, vP, VP, V, PP]
Just like the asymmetry that appears with features, we can ask about the nature of these two asymmetries. Is there something about the nature of head movement that ensures that it occurs along the extended projection of a lexical head and that it picks up material? Or is there something about the nature of XP movement that ensures that only satellites off the extended projection move and that no material is picked up? Chomsky (2001, 38), after noting the asymmetry in what type of constituent each feature targets, writes:

These conclusions... follow naturally if overt V-to-T raising, T-to-C raising, and N-to-D raising are phonological properties, conditioned by the phonetically affixal character of the inflectional categories.

This seems to be correct. We could say that the purpose of head movement is to collect the relevant inflectional morphemes for a lexical root. Head movement could then be placed outside of the main syntactic computational component. Now, with only one type of movement, XP movement, no asymmetries would exist and that would be the end of the story. However, before being content with this conclusion, we should at least try to imagine what sort of movements we would be ruling out. In other words, what would the opposite side of the asymmetry look like? I will call the type of language exemplified in the structure sketched in (1) above an A-type language. I will call the type of language exemplified by the opposite side of the asymmetry (in other words, a VP-, D°-movement language) a B-type language.

3. VP-, D°-Movement Languages

Let us start by first imagining what a B-type language would look like where the D-feature would attract a head while the V-feature attracted a maximal projection. In its simplest form, we might get a structure like that given in (5).

```
(5)
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In this sketch, the closest verbal projection, the vP, would move to the Spec, TP to check the V-feature in T. The D-feature would attract the closest D-head, which would be found in the external argument DP. Filling this structure in with English words, we might expect to find a string such as the one given in (6) below.

```
(6) [TP [vP [DP tk [NP children ] ] come home ] i [T' thek.PST ti ]] ]
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Here, we see where a vP, which contains the external argument minus its determiner, has fronted. The determiner, which has moved to T (where presumably it will adjoin to a tense marker), is stranded sentence-finally. This word order has an
unnatural feel to it, suggesting again that we want to rule out such a derivation. But
often language data are not as simple as a first approximation. Before concluding
that B-type languages do not exist, therefore, we should see whether proposals for
either VP-fronting or D°-movement have been made independently. We will see be-
low that Malagasy arguably has both predicate movement and D°-movement.

3.1 Predicate Fronting in Malagasy
Malagasy is a Western Malayo-Polynesian (WMP) language spoken in Madagascar.
It is a VOS language with fairly rigid word order.2 WMP languages are known for
their complex voice system which can designate a particular DP as the subject. In
Malagasy, there are basically three types of voices—Actor Topic (AT), Theme Topic
(TT), and Circumstantial Topic (CT).3 An example of the paradigm is given below.
The root *sasa* ‘wash’ appears in three different forms—*manasa* when the Agent is
the subject as in (7a), *sasana* when the Theme is the subject as in (7b), and *anasana*
when the Instrumental is the subject as in (7c).

(7) a. [Manasa ny lamba amin’ny savony] ny lehilahy
    PRES-AT.wash DET clothes with-DET soap DET man
    ‘The man washes the clothes with the soap.’
b. [Sasan’ny lehilahy amin’ny savony] ny lamba
    TT.wash-DET man with-DET soap DET clothes
    ‘The clothes are washed with the soap by the man.’
c. [Anasan’ny lehilahy ny lamba] ny savony
    CT.wash-DET man DET clothes DET soap
    Lit.: ‘The soap is washed-with the clothes by the man.’
    ‘The man washes the clothes with the soap.’

There have been several proposals made for a predicate-fronting account for Mala-
gasy.4 These accounts were meant to explain not only the VOS order of the language
(assuming Kayne’s 1994 proposal that languages are basically SVO), but also to ex-
plain adverb orders and the ordering of arguments within the VP. These are dis-
cussed in turn.

In order to look at the word order more closely, we will take an instance of the
Circumstantial Topic where the instrumental *ny savony* is the subject of the sentence.
This means that the Theme *lamba* ‘clothes’ has remained within the VP. Within this
construction, we notice two things in the examples below. First, the order of the ad-
verbs (underlined) is the opposite of the order we find in the English translation. Sec-
ond, while the indefinite object (in bold) must appear to the left of the adverb *tsara*
‘good/well,’ the definite object may appear to its right.

(8) a. [Anasan-dRakoto lamba tsara foana] ny savony
    PRES.CT.wash-Rakoto clothes well always DET soap
    Lit.: ‘The soap is always washed-with clothes well by Rakoto.’
    ‘Rakoto always washes clothes well with the soap.’
a’. *Anasan-dRakoto tsara lamba foana ny savony.
b. [Anasan-dRakoto tsara ny lamba foana] ny savony
PRES.CT.wash-Rakoto well DET clothes always DET soap
Lit.: ‘The soap is always washed-with the clothes well by Rakoto.’
‘Rakoto always washes the clothes well with the soap.’

The basic outline for the word order in Malagasy would be as in (9) below.

(9) [V Agent Theme indef/def Adverb2 Theme def Adverb1] Subject/Topic

Rackowski (1998) tackles the problem of the adverb ordering. She starts with Cinque’s (1999) phrase structure account for the ordering of adverbs and proposes the account sketched below. First, she assumes that adverbs are functional heads along the extended projection of V. As we see in the tree, adverbs are arranged so that they have the same hierarchical order as proposed by Cinque. Rackowski also proposes that AgrPs are not visible for movement. With this in place, we see below that definite Theme movement to Spec, AgrOP and iterative predicate fronting of maximal projections along the extended projection of the V will lead to the appropriate word order. However, we can already note two movements that depart from our simplest version of VP-, D°-fronting languages. We do have V-movement to F, and we still seem to have DP movement, since the object moves to Spec, AgrOP and the subject to Spec, AgrSP. I set these two issues aside until later.
Note that Rackowski’s account of Malagasy seeks to explain not only the predicate-initial property of the language but also VP-internal word orders. Pearson (1998) continues in this direction and proposes a language typology based on VP-internal word orders. He divides VO languages into two types—direct and inverse languages. Direct languages (like English, French, Indonesian, Icelandic) have the two characteristics already mentioned. Adverbs with higher scope precede adverbs with lower scope, and definite objects can appear in positions to the left of where indefinite objects must appear. We have seen examples of the adverb ordering in the English translation of (8a) above. An instance of leftward movement of a definite object in a direct language is given below in the Icelandic Object Shift example. This example can be compared with the Malagasy example in (8) above.

(12) Icelandic (Holmberg 1986, 166)7

a. Hvers vegna lasu stúdentarnir ekki allir greinina
   why read the.students not all the article
   ‘Why didn’t all the students read the article?’

b. Hvers vegna lasu stúdentarnir greinina ekki allir

As a last distinction between direct and inverse VO-languages, Pearson gives examples of the relative ordering of direct objects and indirect objects. In direct languages, indirect objects precede direct objects, while in inverse languages indirect objects follow direct objects in Double-Object constructions. An example from Malagasy is given below. The word order in Malagasy should be compared with the word order of the English translation.

(13) Nanolotra ny dite ny vahiny ny zazavavy

   PST.AT.offer DET tea DET guest DET girl
   ‘The girl offered the guests the tea.’

Pearson sums up his findings in the following table.
Once this typology is set up, two further observations can be made. Pearson gives examples of both VO and OV languages that are direct. We have mentioned some of the VO languages above (English, French, Indonesian, and Icelandic), and two examples of the OV languages are Dutch and Turkish. However, inverse languages are all VO (Malagasy, Tzotzil, Quiavini Zapotec, and Palauan). Pearson accounts for direct versus inverse orders through VP-internal predicate fronting. I believe that the account can be extended beyond the VP. While not mentioned by Pearson, none of these languages are SVO, they are all V-initial. This stronger generalization—that all inverse languages are predicate initial—will become important to the discussion later when this generalization is combined with other generalizations about V-initial languages. What I will argue eventually is that these languages all move the closest verbal projection into Spec, TP.

Let us now return to Malagasy and evidence that this language has the other part of the movement asymmetry—D°-movement.

### 3.2 D°-Movement in Malagasy

We saw above in our simple version of a B-type language that a D-feature in T would attract the D of the closest DP, which would be the external argument in the Spec, vP. While many languages do not allow Agents to remain in Spec, vP while another DP is in the Spec, TP position, Malagasy and related languages make use of both positions (see Guilfoyle, Hung, and Travis 1992). In fact, many of the examples we have seen have exactly this characteristic. One of these, (7c), is repeated in (15) below.

(15) Anasan’ny lehilahy lamba ny savony
    CT.wash-DET man clothes DET soap
    Lit.: ‘The soap is washed-with the clothes by the man.’
    ‘The man washes clothes with the soap.’

Note that the Agent follows the verb directly and appears between the verb and the indefinite object. We have already seen that adverbs may not appear between the verb and an indefinite object. Therefore, we will assume that the object is in its merged position and that the verb has moved across the Agent in Spec, vP to a higher functional category. The conclusion that we need here is that the Agent is in the Spec, vP. Following the orthographic conventions of Malagasy, the determiner of
this Agent is joined with the preceding verb. In fact, this convention reflects a morphophonological process that Keenan (2000) has discussed under the label of N-bonding (see also Paul 1996). I refer the reader to these articles for details, but what is important to the issue at hand is that three elements can undergo N-bonding—determiners (16a), pronouns (16b), and proper names (16c).9

(16) a. [Hitany’ny lehilahy] ny trano
   TT.see-DET man DET house
   ‘The house was seen by the man.’

b. [Hitanao] ny trano.
   TT.see-2SG DET house
   ‘The house was seen by you.’

c. [HitandRabe] ny trano.
   TT.see-Rabe DET house
   ‘The house was seen by Rabe.’

N-bonding is obligatory in these positions and has the phonological characteristics of other processes in Malagasy such as compounding, as shown below.10

(17) a. híta + Rabé  \rightarrow hitandrabé
   seen + Rabe  seen by Rabe

b. tráno + rázana  \rightarrow tranondrázana
   house + ancestor  tomb

The syntactic account of N-bonding is, I argue, the surface effect of D°-movement.11 The three elements that undergo this process—determiners, pronouns, and proper names—are the three elements that Postal (1969) argued are determiners, which in current phrase structure would be contained in D.

In sum, in one language, Malagasy, we have found evidence for both of the kinds of movement we expect to find in a B-type language: the closest predicate projection moving to Spec, TP and the closest D° adjoining to a higher functional head. Let us, then, look at the details of the structure of Malagasy and see how it differs from the simple system that was outlined in (5) above.

3.3 Structure of Simultaneous VP-, D°-movement

We saw above what we expected from a B-type language. The whole vP was fronted, including at least a remnant of the external argument. The sentence began with the N of the external argument and ended with the D of the external argument, which had moved to a tense marker. This is shown in bracketing in (18a) below. A similar (though simplified) bracketing structure of Malagasy is given for comparison in (18b), with the associated phrase structure in (19).

(18) a. [TP [vP [DP t_1 NP] v VP ]_k D_rT t_k ]

b. [XP [TP T-v_m-D_i [vP [DP t_i NP] t_m VP ] ]_k X [vP DP Y t_k ]]
The picture we have seen for Malagasy is different from the simple structure in three ways. First, the D°-movement is contained within the predicate phrase that is fronted. Because of this, the D is not stranded sentence-finally. In the structure given in (18b) above, we can see that the D° has moved to T and the whole TP has moved to the specifier position of another functional projection, which I have labeled XP, along the extended projection line of the verb. Another difference between Malagasy and the simple structure is that, in Malagasy, there is, in addition to the external argument that has remained within the vP, another DP which acts as the subject and which appears sentence-finally. I have placed this DP in the specifier position of another maximal projection labeled YP. Finally, there is evidence of V°-movement accounting for the sentence-initial position of the verb.

Because of space considerations, I do not discuss the details of the departure from the simplest version of a B-type language. In Travis (forthcoming) I deal with these issues directly. I argue that the verb movement in Malagasy is contained within the heads that are event related, as opposed to A-type languages where verb movement enters the inflectional domain of the clause. I also argue that there is no XP movement in Malagasy outside of predicate fronting. Subjects are base generated in the Spec, YP position and related to their predicates via a form of Clitic Left Dislocation. Wh-questions are formed through a pseudocleft construction (see Paul 2001) which contains these predication structures rather than through wh-movement.12 What is necessary for the the point being made here is that a slightly more complicated side of the asymmetry under investigation is appearing. Further, the existence of a language like Malagasy suggests that there may be a language typology that is circumscribed by the feature system used to trigger movement. We turn to an investigation of this possibility next.

4. Language Typology
Above, in our discussion of Malagasy, we made use of a language generalization that is brought to light in Pearson’s discussion of direct versus inverse languages. My revision of his generalization was that only predicate-initial languages show inverse order within the VP. Now we will look at two other generalizations that have been made about predicate-initial languages. Again, I will change the original formulation of these generalizations slightly, but I believe that with these changes, a consistent picture emerges.
4.1 Baker and Hale’s Generalization: Breton and $D^0$-Movement

Baker and Hale (1990) propose that some cases of subject agreement are best accounted for through movement of a $D$ to the head which contains the verb. They point out that this analysis would explain the complementary distribution of overt subjects and subject agreement on the verb. Breton is a language which displays such complementarity, as shown in their example given below. In (20a), there is an overt subject and the verb shows no agreement. In (20b), where there is agreement morphology on the verb, the subject is nonovert. Finally, (20c) shows that co-occurrence of an overt subject and subject agreement is not possible.

(20) a. Bemdez e lenn ar vugale eul levr
every.day PRT read the kids DET book
‘The kids read a book every day.’
b. Bemdez e lenn-ont eul levr
every.day PRT read-3PS DET book
‘They read a book every day.’
c. *Bemdez e lenn-ont ar vugale eul levr
every.day PRT read-3PS the kids DET book

Structurally, the $D^0$-movement may be represented as in (21) below.

(21)

As we can see, this is very similar to the structure we have proposed for $D^0$-movement in B-type languages. What is particularly intriguing in this context, then, is the generalization Baker and Hale make. They argue, for reasons closely tied to the goals of their paper, that only V-initial languages can have this sort of D-movement.13 Interestingly, the other example of a language that they give with this characteristic is Yatee Zapotec, another VSO language. I will come back to the importance of this observation below. Now we turn to another generalization that has been made about V-initial languages.

4.2 Oda’s Generalization: Irish and VP Fronting

Oda (2002) notes that V-initial languages fall into two types with respect to how $wh$-questions are formed. He argues that those that use $wh$-cleft constructions are predicate-fronting languages, while those that use $wh$-fronting are V-movement languages.14 His work is important since, as Massam’s (1998) investigation of Niuean has shown, some VSO languages are best analyzed as having remnant-VP movement.
Oda’s work adds another probe into what is otherwise a very subtle phenomenon. Much of his research centers on Irish, which he argues is, like Niuean, a VSO language with remnant-VP movement. First, he notes that Irish forms \textit{wh}-constructions with a cleft construction. As we see below, the same marker is used for relative clause formation (22b) as is used for \textit{wh}-constructions (22a) (from Oda 2002, 75; taken from McCloskey 1979, 52). Oda argues that this marker indicates the nominal characteristics of the material following the \textit{wh}-element.

\begin{enumerate}
\item[(22)] a. Cé a L dhíol an domhan
\begin{quote}
\text{who COMP sold the world}
\end{quote}
\begin{quote}
\text{‘Who sold the world?’}
\end{quote}

\item[(22)] b. an fear a L dhíol an domhan
\begin{quote}
\text{the man COMP sold the world}
\end{quote}
\begin{quote}
\text{‘the man who sold the world’}
\end{quote}
\end{enumerate}

He backs up his claim that Irish is a predicate XP-fronting language with the observation that nonverbal predicates clearly appear before the subject in an XP form. Below we see an example where a nominal XP predicate appears sentence-initially.

\begin{enumerate}
\item[(23)] Is [amhrán a L bhuailfidh an piobaire] “Yellow Submarine”
\begin{quote}
\text{COP \text{ song COMP be.FUT the piper “Yellow Submarine”}}
\end{quote}
\begin{quote}
\text{‘Yellow Submarine is a song which the bagpiper is going to play.’}
\end{quote}
\end{enumerate}

Oda presents the generalization as a one-way implication—predicate-initial languages utilize \textit{wh}-cleft constructions. If we hypothesize that this is a two-way implication, however, the use of \textit{wh}-cleft constructions can be another indication of the predicate-fronting status of a language.\textsuperscript{15} In my terms, languages that use \textit{wh}-clefting strategies to form \textit{wh}-constructions are B-type languages. In a B-type language, XP movement will target only predicate projections. If this is so, apparent \textit{wh}-movement must be a case of predicate fronting. Through my revision of Oda’s generalization, we gain another way to distinguish B-type languages. In the next section I argue that this hypothesis leads us to the right analysis of Malay.

\textbf{4.3 Problem}

My hypothesis above is that languages whose main \textit{wh}-strategy is clefting are predicate-fronting languages, but we immediately run into a problem with Malay. This language is quite clearly an SVO language, as shown in (24) below.

\begin{enumerate}
\item[(24)] Ali/Saya/Lelaki itu membaca buku itu dengan teliti.
\begin{quote}
\text{Ali/I \text{boy the AT-read book the with care}}
\end{quote}
\begin{quote}
\text{‘Ali/I/the boy read the book carefully.’}
\end{quote}
\end{enumerate}

However, unexpectedly, given my hypothesis, \textit{wh}-constructions use a clefting strategy. The complementizer \textit{yang} marks the following material as being nominal.

\begin{enumerate}
\item[(25)] Siapa yang membaca buku itu
\begin{quote}
\text{who COMP AT-read book the}
\end{quote}
\begin{quote}
\text{‘Who read the book?’}
\end{quote}
\end{enumerate}
As the verbal morphology may have signaled to the reader (even if the language name did not), Malay is another WMP language. Like other WMP languages, it uses a \( wh \)-cleft construction. However, unlike most other WMP languages, it is SVO rather than predicate initial. But before deciding that Malay must be an A-type language, we can turn to the other main characteristic of B-type languages, \( D^0 \)-movement. In fact, another case of \( D^0 \)-movement can be found in the literature. In Guilfoyle, Hung, and Travis (1992) (GHT), I argued with my coauthors that the word order facts of a certain passivelike construction in Malay was best accounted for through \( D^0 \)-movement. The relevant data are given below. We have seen that Malay is generally SVO. However, as we can see in (26), when we get a bare verb form, certain elements may appear in a position between the subject and the verb. In particular, pronouns and proper names may appear in this position (26a) but not common nouns (26b).

   book the Ali/you read with care
   ‘The book was read by Ali/you carefully.’

b. *Buku itu lelaki itu baca dengan teliti.
   book the man the read with care
   ‘The book was read by the man carefully.’

This is similar to the N-bonding of Malagasy that we saw above.\(^{16} \) It appears, then, that in the bare verb form constructions in Malay, where the Theme appears in the subject position, the Agent may appear preverbally if it is exhaustively dominated by \( D^0 \). In GHT, we accounted for this by proposing a \( D^0 \)-movement to a preverbal position. The relevant tree structure is given below.\(^{17} \)

(27)

We see now that Malay has two of the hallmarks of a B-type language—\( D^0 \)-movement and \( wh \)-clefts. What Malay is missing, then, is the predicate fronting. This is true not only at the level of the sentence (it is SVO rather than V-initial), but also VP-internally. Pearson mentions Indonesian as a direct (rather than inverse) language. Given the close links between Bahasa Indonesia and Malay, one can assume that Malay is also a direct language. This means that there is no predicate fronting internal to the VP, either, in Malay. This might seem problematic. Within the Minimalist Program, however, lack of overt (phonological) effects of movement has been one of the main ways
that languages may vary. Just as we have cases of languages with covert \textit{wh}-movement (Japanese, Chinese) and covert \textit{V}-movement (English), we might expect languages with covert predicate movement. In fact, we must resort to covert \textit{D\textdegree}-movement in many cases of B-type languages as this process appears to be quite rare crosslinguistically. Malay, then, would be a B-type language with overt \textit{D\textdegree}-movement and covert predicate movement. We are now ready to look at our language typology.

4.4 The Typology

Below we see a table which gives examples of different types of languages in terms of what type of projection (X\textdegree vs. XP) is targeted by a particular feature and whether or not the movement is overt.\textsuperscript{18} It is interesting that in the discussion of the language generalizations above, the same languages or language families reappear. Malagasy (WMP) has been used to argue for predicate fronting. Malay (WMP) has been used to illustrate \textit{D\textdegree}-movement. Oda argues that Irish (Celtic) is a predicate-fronting language and therefore a \textit{wh}-cleft language. Baker and Hale argue that Breton (Celtic) has \textit{D\textdegree}-movement and therefore must be predicate initial. The other example of a \textit{D\textdegree}-movement language given by Baker and Hale is Yatee Zapotec. Pearson gives Quiavini Zapotec as an example of an inverse language, and Lee (2000) has argued that Quiavini Zapotec is a VP-fronting language. I claim that the clustering of these properties falls out from the typology of V\textdegree-, DP-movement languages versus \textit{D\textdegree}-, VP-movement languages. Some possible language variations are given below.

(28) \textbf{Features} \hfill \textbf{V} \hfill \textbf{D}

\begin{tabular}{ll}
A. French & X \hspace{1cm} XP \\
Greek & X \hspace{1cm} — \\
English & — \hspace{1cm} XP \\
B. Malagasy & XP \hspace{1cm} X \\
Niuean & XP \hspace{1cm} — \\
Malay & — \hspace{1cm} X \\
\end{tabular}

Other characteristics of B-type languages that fall out from this typology are the use of \textit{wh}-clefts for \textit{wh}-constructions and evidence that there is no A-movement of subjects and objects.\textsuperscript{19} These are empirical issues that need more data to support them and are left for future research.

5. Movement Typology

There is another result of this line of research. By looking at familiar movements in unfamiliar surroundings, we can learn more about what is central to their nature. Two additional movement asymmetries were sketched above. It appears that head movement moves something along a maximal projection picking up affixal matter, while XP movement moves satellite elements that do not change content during the derivation. In B-type languages, we can examine whether the behavior of head versus XP-movement is truly related to the bar level of the item being moved. We will see that it is not the level, but rather the category type, that is crucial to the behavior of
movement. On one hand, this is what we expect in a movement theory that relies on categorial features. However, it does not support Chomsky’s (2001) observations about the nature of head movement. Let us look at this in more detail.

5.1 \(V(P)\)-Movement

In looking at VP fronting, the question we can ask is whether it will behave more like DP movement (because it is an XP) or V-movement (because it is verbal).\(^{20}\) We have two reasons below to argue that VP fronting is similar to V-movement. By definition, it moves something from the extended projection rather than from a satellite. More interesting, perhaps, is that it shows the snowball effect. Schematically, it works as in the tree in (29) below. Once the WP moves into the Spec, ZP position, it no longer moves on its own. Rather, it is the ZP that dominates it that is targeted for the next movement.

\[
\text{(29)} \quad \begin{array}{c}
\text{XP} \\
\text{YP} \\
\text{ZP} \\
\text{WP} \\
\end{array} \quad \begin{array}{c}
\text{X'} \\
\text{Y'} \\
\text{Z'} \\
\text{WP} \\
\end{array}
\]

This snowball effect introduced in (11) is clearly shown in the structure above. Correlations, then, go along categorial distinctions rather than level distinctions. This result is supported by the \(D^o\)-movement facts discussed in the next section.

5.2 \(D^o\)-Movement

The behavior of \(D^o\)-movement is harder to investigate. It happens rarely, and when it does happen, it seems to be frozen after one move. However, it does provide us with one observation. It is clear that a D can move outside of its extended projection. In this way, it is very different from what we have seen in the most common cases of \(V^o\)-movement and suggests that it has more in common with DP movement. It is hard to argue, as Chomsky (2001, 38) did, that the function of this movement is “conditioned by the phonetically affixal character of the inflectional categories.”\(^{21}\) No affixal material can be used to explain the position of the external argument in Malay.

The second characteristic of movement is not reflected. Because there is only one link of the chain, we cannot determine whether the effect is snowball or rolling stone. It is interesting to note, however, that its movement to V seems to block further movement of either the V or the D. I speculate at the end of this chapter why this might be. Now we turn to an account of the details of movement that relies crucially on features.
5.3 An Account
Chomsky (2001) suggests that the snowball effect of head movement is due to the affixal nature of the landing sites. This is clearly not the case when predicate movement forces a snowball effect. Let us go through a derivation step by step, but let us assume (i) that features target the largest X(P) category with the relevant feature and (ii) that every head and projection along an extended projection line of V carries a V-feature. Now we turn to the relevant phrase structures. In (30a) below we see a derivation at the point where a functional head (say T) with an uninterpretable V-feature is merged into the structure. In the case of a B-type language, this feature will target a VP, and in the case of an A-type language, the feature will target a V°.22 Now the derivations diverge. In an A-type language, the V will adjoin to F1, as in (30b), and in a B-type language, the VP will move to Spec, F1P, as in (30c). Now we ask the question what will happen when another functional category with the V-feature is merged into the structure. In the A-type language, this new V-feature will target the largest X° carrying the feature.23 This will be the F1 which contains V and F1. In the B-type language, the largest XP carrying the V feature will be F1P.

(30) a.

Now we can see that the snowball effect has nothing to do with affixes and everything to do with features. DP movement will never show this effect within the extended projection of a verb because the features will never be the same.24 A DP in the Spec, TP, for example, will be chosen over TP for movement because it alone will have the relevant D-feature.
I end with a speculation about the oddities of D°-movement (as compared with V°-movement). We have seen that D°-movement is frozen after one move. There is no further movement of the D° or the V° to which it has adjoined. It should come as no surprise that the V° does not move any further, since, by hypothesis, there is no head movement of the V into the inflectional domain of a B-type language. However, we might expect the D° to move higher. It may be, however, that there is one constant in the behavior of feature attraction in head movement. We can imagine that a feature probe cannot locate a feature that is attached to a subpart of an X°. If we look at the tree in (27) below, in order to have the D move further, a higher D-feature would have to see the D inside the verbal head X. It is plausible that the V-specification of X would block access to the D-feature below.\textsuperscript{25} Note that this does not mean that there are two reasons for the snowball effect of head movement—one due to the largest X(P) requirement and one due to the invisibility of a feature. In the first case, an alternative target is sought, while in the second, movement is simply not an option. In any case, this explanation for the freezing of D°-movement requires more data and more thought.

6. Conclusion
The aim of this chapter was to argue for accepting both sides of an asymmetry that is set up by a system where movement is triggered by the features V and D. While Chomsky (2001) suggests that VP-, D°-movement languages are not expected to occur, there are fairly robust arguments that they do. In fact, by using movement of VP and D° versus V° and DP to divide languages into two types, we find interesting correlations with other language phenomena such as \textit{wh}-clefts and base-generated predication structures (i.e., lack of DP movement). Further, we can better understand the nature of movement by first accepting that there are two types—X°-movement and XP movement—and examining both types within the context of the two types of language. It is only at this point that we can move beyond how we feel the two types of movement should behave to truly understanding their nature.

ACKNOWLEDGMENTS
The first step of this material was presented at the Theoretical and Applied Linguistics Laboratory at the University of Western Ontario. I appreciate feedback from that audience as well as from audiences at the University of California-Santa Cruz, AFLA XI, GURT, TEAL, Academia Sinica, and the University of Arizona. I am also grateful for the financial support of SSHRCC grant 410-2004-0966 and the patience of my native language consultants.

NOTES
1. Many cases of remnant movement often work differently with respect to these asymmetries. At this point, I leave aside a discussion of work such as Koopman and Szabolcsi (2000), but this will certainly become relevant in the next stage of this research.
2. There is an ongoing debate within the WMP literature on the status of the DP that I call the subject. It has been analyzed as a Topic (e.g., Richards 2000; Pearson 2001), an absolutive DP in an ergative system (Aldridge 2004; de Guzman 1988; Gerdts 1988), and a nominative adjunct (Sells 1998). I, like Kroeger (1993), Paul (2000), and Keenan (2000), call it a subject but in fact believe that it is
base generated externally and is related to the predicate through the verbal morphology in a construction which is similar to Clitic Left Dislocated structures in Italian (Cinque 1990).

3. There are a variety of Actor Topic and Theme Topic forms and a variety of Circumstantial Topic uses. See Rajemisa-Raolison (1971) for a description of some of these and Paul (2000) for an account.

4. These proposals were triggered by similar proposals made by Massam (1998) and Massam and Smallwood (1997) for Niuean, a language on the Polynesian side of the Austronesian language family.

5. In this respect, the adverbs in Malagasy would behave syntactically like the functional particles described in Cinque (1999, 58).

6. I haven’t specified where the subject moves from in this case since the merged position of instrumentals raises further questions that I do not intend to address.

7. I have glossed (12a) as Holmberg has done. Presumably hvers vegna together mean ‘why.’

8. This is also shown on Rackowski’s tree given in (10), though she uses the notation VP rather than vP.

9. This form of the 2SG pronoun is listed in grammars as -nao since it is always a suffix. Other forms of the pronoun are ianao (nominative) and anao (accusative).

10. There are some important differences between the two outlined in Paul (1996) that are, I would argue, due to the fact that N-bonding is movement triggered by a feature while compounding is not.

11. A remaining question or problem in this analysis of N-bonding is the apparent right adjunction of the movement. At this point, I have no alternative but to allow right adjunction. Below, in the discussion of Malay, we will see an example of D°-movement that is done with left adjunction.

12. Object placement and apparent movement also have to be done through base generation. This clearly needs to be researched more.

13. The point of their paper is to show that D-incorporation from subjects behaves differently from N-incorporation from subjects and that the languages that allow the former will never have the latter. For my purposes, their correlation with the V-initial status is what is crucial.

14. As pointed out by Oda, more accurately, the wh-structure is that of a pseudocleft of the form The one who sold the world is who?

15. A-type languages can create wh-clefts and wh-pseudoclefts, but this would not be their primary strategy for creating wh-constructions. A-type languages can also front predicates for discourse reasons (Do their homework they will), but again these constructions are marked in discourse.

16. For some reason, if the head movement of the D is string vacuous as in Malagasy, the determiner of a common noun can be included in the process. When the movement is not string vacuous as in Malay, only Ds that do not take a complement NP can undergo movement. This is a concern and I leave it for further study.

17. Again, I have labeled the projection above VP XP to be deliberately vague.

18. Note that I am assuming that no language utilizes head movement in both cases or XP movement in both cases. I have doubts that such languages exist, and we would like this to be for principled reasons. This is one of the next steps of this project.

19. Guilfoyle (1990) argues that Irish has no A-movement, though see McCloskey (2001) for a differing viewpoint. In Travis (2001), I argue that Malagasy does not have derived objects.


21. Note that the examples that Chomsky gives are, indeed, of this nature. The point here is that not all head movement is of this type.

22. I haven’t said how the relevant parameter is encoded and this requires more work. Somehow, features “know” whether they are seeking X°s or XPs.

23. Obviously, it also has to meet any locality conditions on movement.

24. This snowball effect would be expected to appear within the extended projection of an N, however. And, as pointed out to me by Liliane Haegeman, this is, in fact, attested.

25. Obviously this would only happen within X°s, since DPs are visible for further movement from Spec, TP.
REFERENCES


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