A syntactic account of nominalizations in Kham

Kenyon Branan
Linguistics Program
Senior Honors Thesis
Brandeis University
Advisor: Lotus Goldberg
April 30, 2013
The aim of this thesis is to argue for an account of three types of nominalization in Kham, a Tibeto-Burman language spoken primarily in the Rapti Zone of Nepal. Two of these three types of nominalizations function similarly to adjectives or relative clauses. I provide two accounts of these nominalizations. Both accounts rely on a Hierarchy of Projection-based analysis, which can drive Merge. The account which I ultimately argue to be superior is one in which the nominalizing morpheme is merged into the position in which an argument—which would typically be a DP—would appear in a non-nominalized sentence. This nominalizing morpheme, which I take to be an n then re-merges to a higher position in the tree later in the derivation. However, in addition to moving, this n head is also the one of the two objects targeted by Merge which projects. This accounts for the distribution and translation of these types of nominalization when they do not appear to modify some other noun. The account will use a version of Distributed Morphology, drawing most heavily on particulars [Embick (2010)], coupled with Minimalist Program assumptions from [Adger (2003)], and a version of head movement from [Matushansky (2006)]. In addition, I assume a phase-based theory of syntactic derivations as laid out in [Chomsky (2001)].

To begin with, I will give a bit of background information about Kham. Kham is a thriving language, with about forty to fifty thousand native speakers. It is spoken in fairly remote regions of Nepal. This paper deals primarily with the Takale dialect, which is a regional prestige dialect. The data in this paper all come from the work of David Watters’ A Grammar of Kham, supplemented by his earlier work on the language in Clause Patterns in Kham and in his doctoral dissertation. As such I unfortunately have not had access to a native speaker of Kham. However, the extensive quantity of data and the descriptive richness and detail of the material in Watters’ grammar and older works includes an impressive array of facts and puzzles that are typologically and formally intriguing.

The structure of this thesis is as follows. In section 1 I present the three types of nominalization in Kham that form the core data for which this paper will aim to account. In section 2 I lay out the background theoretical assumptions that I will utilize in this thesis. In sections 3 and 4 I lay out two contrasting analyses. I ultimately argue for a Hierarchy of Projection in which all elements
are optional, which drives the Merging of extended projections. This involves positing at least two such functional sequences: one corresponding to verbs and their associated extended projections, the other corresponding to nouns, and their associated extended projections. I propose a novel interaction between the two functional hierarchies, where the output of one functional sequence can feed the production of another functional sequence. This accounts for the multiple affixation points of the nominalizer -o, as well as the reasons that it functions in different but related ways in the various types of nominalization treated in this thesis. I close with suggestions as to how to tie my proposed analysis into other forms of nominalization in Kham, as well as other possible places where functional projections can intersect.

1 Data

In this section, I will lay out the empirical facts surrounding the three types of nominalization—which I refer to as type 1, type 2, and type 3 nominalizations—that this thesis considers. All three types of nominalization involve the same nominalizing morpheme, but differ from each other in a number of ways, in terms of both the morphological complexity within each nominalization, as well as the distribution of the nominalization itself in the larger Kham clause or sentence. I also provide evidence for a differentiation between two of these three nominalization types, which is not immediately obvious. This is because these two sorts of nominalization can have the same surface realization.

This section is structured as follows. First, in 1.1 I give data which suggests that type 1 and type 2 nominalizations are in fact syntactically distinct. Next, in 1.2 I rule out the possibility that the differences between these types of nominalization are the result of the intransitivity or unaccusativity of the nominalized verbs in question. Then, in 1.3 I examine additional data related to type 2 nominalizations, examined without reference to type 1 nominalizations. In 1.4 I give data related to type 3 nominalizations, which are nominalized matrix clauses. First, 1.4.1 gives a very brief overview of matrix clause syntax in Kham, which is necessary to understanding type 3
nominalizations. Next, in \[1.4.2\] I give the data about type 3 nominalizations.

This section lays out evidence that there are three sorts of nominalizations in Kham. Watters (2002) considers the first to correspond roughly to adjectivals, while viewing the second as corresponding to some types of relative clauses. Watters (2002)'s evidence for this comes from the grammaticality of certain orderings of these two types of nominalizations with respect to each other. Additional evidence comes from fairly strong differences in meaning when these two types of nominalization appear as arguments in various types of copula clauses.

All three nominalization types include the nominalizer morpheme \(-o\) in Kham, which has three phonologically conditioned allomorphs, \([o]\), \([wo]\), and \([u]\). As we will see, however, this morpheme can be used in a number of strikingly different constructions in the language, three of which will be treated in this document\[1\]. The first, which I will refer to here as a “type 1” nominalization, is used to derive a subset of verbs in the language into something which performs the function that adjectives would in languages in which adjectives are an open class category. The second, which I will refer to as a “type 2” nominalization, is used to derive all verbs in the language into something which performs a similar function to relative clauses in languages which prefer relativization strategies to this sort of modification over nominalization. The third, which I will refer to as a “type 3” nominalization, is used for a number of discourse-linked reasons in Kham, and is a nominalization of an entire matrix clause, which can be

### 1.1 Type 1 and Type 2 nominalizations

In this section, I will detail the empirical facts of type 1 nominalizations in Kham. I will also put forth evidence that they should be differentiated from another sort of nominalization in Kham, which I call type 2 nominalizations. Because of the contrasting nature of this section of my thesis, I will also introduce some facts about type 2 nominalizations in this section.

I will first establish how adjectivals, or type 1 nominalizations, actually work within a noun phrase in terms of positioning. These examples provide insight into the All of the examples

\[1\] Another, which Watters proposes is a different sort of relative clause, won’t be analyzed.
in (1) are examples of grammatical Kham noun phrases which show some typical uses of such nominalized verbs yielding an adjectival meaning.

(1)  a. tubu  gyro:wo mi:
     one big-NML person
     ‘one big person’

     b. no  gyro:wo mi:
     that big-NML person
     ‘that big person’

     c. no tubu  gyro:wo mi:
     that one big-NML person
     ‘that one big person’

     d. no sohmlo  b@n@ gyro:wo zihm-ra
     that three very big-NML houses-PL
     ‘those three very big houses’

     e. sahr-o  pal-o  kwa:
     new-NML white-NML cloth
     ‘new white cloth’

     f. gyro:wo gyahm-o  guhl
     big-NML red-NML snake
     ‘a big red snake’ Watters (2002)

(1-a-b) establish that both numerals as well as demonstratives precede nominalizations. (1-c) establishes that demonstratives precede numerals when they co-occur. (1-d) establishes the positioning of adverbials with respect to the nominalizations they modify; in this case, an intensifier meaning ‘very’ follows the demonstrative and number but precedes the nominalization. (1-e-f) establish that these sort of nominalizations work in a way similar to adjectives in a languages such as English. This includes that more than one such nominalized verb can modify the same noun, as in (1-e-f), where quality-describing nominalizations precede color-describing nominalizations. The other examples in (1) show the preferred ordering of various modifiers in a noun phrase with regard to each other.

Kham has almost no adjectives as a native class, and adjectives are clearly not an open class category in Kham. There is only a very small list of Nepali loan adjectives used, and an
even smaller list of native Kham adjectives. In the dialect under consideration, for instance, there are only three native adjectives: *gehppa* ‘big’, *zimza* ‘small’, and *twi:zya* ‘short’. Instead, most adjectival meanings are expressed as nominalizations of verbs.

Among adjectival meanings expressed using nominalized verbs, nominalizations of what could be called “descriptive verbs”, which correspond to adjectives in languages which have open adjectival classes, versus “action/process” verbs, which are words which are fairly standardly verbs cross-linguistically, turn out to have different syntactic behavior as well. This involves the fact that Kham has three clearly copular strategies: The first involves a phonologically null copula that equates two arguments to each other. The second uses the overt copula *ta*, which literally means ‘become’, and the third uses the locative copula *li*, used as the *be* in an example like “He is at the store.”. Both of these overt copulas perform a number of other functions in Kham, and only take on a copular meaning in non-perfective aspects. For these copular uses, *li* means that something is currently true, whereas *ta* means that something is generally true.

Turning now to the distinction between nominalizations of descriptive versus action/process verbs, corresponding ultimately to the distinction between what I will call “type 1” and “type 2” nominalizations: nominalized action/process verbs (type 2) cannot use the copula *li* in a predicative sense, whereas nominalized descriptive verbs (type 1) can. Both the nominalized verb *ba*, ‘go’, and the nominalized verb *gyo:h*, ‘big’, modify *mi:*, ‘person’ in the same way when they appear DP internally, as they do in (2).

(2) a. ba-o mi: go-NML person ‘the person who went’

   b. *gyo:h-wo mi:* big-NML person ‘the big person’    

One could propose that (2) are both examples of subject relative clauses in Kham, but there is evidence that the nominalization in (2-b) is not the same as the nominalization in (2-a). As shown

\footnote{I will also note here that *gyo:h* is not an allomorph of *gehppa*, as *gyo:h* is grammatical with tense/aspect marking whereas *gehppa* is not.}
in (3-a,b), nominalized action/process verbs such as *ba, ‘go’ cannot function as the argument of the copula li when nominalized, while nominalized descriptive verbs such as gyo:h, ‘big’, can.

(3) a. *ao ba-o li-zya  
this go-NML be-CONT  
‘This is a goer’

b. ao gyo:h-wo li-zya  
this big-NML be-CONT  
‘This is big.’ [Watters (2002)]

Verbs like *ba, ‘go’ can only occur with a null copula, when they occur in a copular construction, with a meaning similar to that taken by verbs like gyo:h, ‘big’ in a copular construction with li. In contrast, descriptive verbs like gyo:h, ‘big’ can take either the null copula or li, yielding essentially identical meanings.

An additional contrast arises when such uses of the equative copula are examined, such as in (4). There is also some evidence which comes from the phonologically null copular construction in Kham which suggests a difference between type 1 and type 2 nominalizations. This is shown in (4), where (4-a) contains a type 2 nominalization, and (4-b) contains a type 1 nominalization.

The difference between (4-a) and (4-b) is suggested by [Watters (2002)], however, the exact nature of this difference is never made particularly clear. Here, each nominalization is used with the null equative copula.[3]

(4) a. ao ba-o  (z@)  
this go-NML (EMPH)  
‘This (one) is one that went.’  [Watters (2002)]

b. ao gyo:h-wo  (z@)  
this big-NML EMPH  
‘This (one) is a big one.’  [Watters (2002)]

In (4-a-b), the English translation shows both ba-o and gyo:h-wo glossed as referring to entities, rather than as attributes. Both of these nominalizations refer to an entity bearing the property they

3The emphasis particle z@ occurs here optionally. The use of this particle does not change the meaning of these examples.
denote rather than that property in and of itself. In Kham, the demonstrative \textit{ao}, translated as ‘this’, can be used both as a demonstrative determiner as well as a referential pronoun, like English ‘this’. So, (4-a)’s meaning of ‘this (one) is one that went’ involves a going entity, which is the ‘one’ in the third line of the example, rather than ‘this one went’. Similarly, (4-b) means something like ‘this (one) is a big one’, and picks out a specific entity as being a big one. This shows that while both the verbs like \textit{gyo:h}, ‘big’, and those like \textit{ba}, ‘go’, can occur in the null copula, only verbs like \textit{gyo:h}, ‘big’, can take the copula \textit{li}: \textit{ba}, ‘go’, is ungrammatical when used with \textit{li}. These examples are somewhat opaque. An explanation for this could have to with the fact that many verbs which are licit in type 1 nominalizations may also be licit as part of type 2 nominalizations. These null copular strategies can only occur with non-nominalized nominals or with type 2 nominalizations, but not type 1 nominalizations.

Interestingly, like \textit{ba}, ‘go’, regular nouns also cannot be predicated using the copula \textit{li}, and instead can only take the phonologically null copula, as shown by the alternation in grammaticality in (5).

\begin{align*}
(5) \quad &a. \quad *\textit{ao mi: li-zya} \\
&\quad *\text{This person be-CONT} \\
&\quad \text{‘This is a person.’}^{\text{Watters (2002)}} \\
&b. \quad \textit{ao mi: zo} \\
&\quad \text{this person EMP} \\
&\quad \text{‘This is a person.’}^{\text{Watters (2002)}}
\end{align*}

This shows that type 2 nominalizations are somehow “more nominal” than type 1 nominalizations, because type 2 nominalizations and regular nouns both cannot occur in the \textit{li} constructions that type 1 nominalizations can.

\subsection*{1.2 Ruling out transitivity or unaccusativity as the cause of this alternation}

Type 1 and type 2 nominalizations have similar surface forms. However, they do not have identical grammatical distribution. Here, I lay out evidence that these are two distinct types of nominalization, despite the fact that they often have similar surface forms, and occur with the same nomi-
nalizing morpheme -o. I also rule out the possibility that this distribution is based in transitivity or unaccusativity, by examining differences in grammaticality and meaning of these two types of nominalization when they occur in the context of certain auxiliary (or auxiliary-like) verbs.

One thing that might come to mind is that this is alternation is based around a distinction between transitive and intransitive verbs, or between unergative and unaccusative verbs, with the difference in nominalizer function being divided along these lines. This is because ‘go’ is usually thought of as being an unergative verb. The argument for ‘go’ as a transitive verb in Kham could be made, as going events usually require a location. However, as the following examples will evidence, this cannot be the case. The verb *si*, ‘die’, is an unaccusative verb, presumably as *gyo:h*, ‘big’, is; however, *si*, ‘die’, patterns with *ba*, ‘go’, in terms of the way that nominalization works. By this, I mean that *si* and *ba*, when nominalized, seem to necessarily have some referent, and additionally cannot occur with *li*. Also note that *si* is grammatical in the same null copula constructions as *gyo:h* and *ba*, with similar meaning to examples including them, shown in (6).

(6) ao si-u zə
   this die-NML EMPH
   ‘This is a dead one.’ [Watters (2002)]

(7) and (8) show a distinction in meaning between the unaccusative *si*, ‘die’, and the descriptive verb *gyo:h*. These examples are minimal pairs where the only difference between the corresponding examples is the alternation of a verb root between *gyo:h*, ‘big’ and *si*, ‘die’.

(7) a. Ø gyo:h-ke
   (it) big-PFV
   ‘It became big.’ [Watters (1995)]

b. gyo:h-wo ta-ke
   big-NML become-PFV
   ‘It became big.’ [Watters (1995)]

c. gyo:h-wo jēi-ke-o
   big-NML make-PFV-3SA
   ‘He made it big.’ [Watters (1995)]
(8)  

a. Ø si-ke  
   (it) died-PFV  
   ‘It died.’ [Watters (1995)]

b. si-u ta-ke  
   die-NML become-PFV  
   ‘It turned out to be dead.’ (lit. ‘The dead one happened’) [Watters (1995)] or ‘It must die’ [Watters (1998)]

c. si-u joi-ke-o  
   die-NML make-PFV-3sA  
   ‘He arranged that it would be a dead one.’ (lit. ‘He made it the dead one’) [Watters (1995)]

(7-a) and (8-a) both show these two verbs occurring in the perfective, with a difference in meaning. 
In (7-b) and (8-b), we can see that there is an alternation in meaning between these two nominalized structures, where (7-b) has an interpretation when that nominalization co-occurs with the verb ta, ‘become’, which is much closer to or the same as (7-a); [Watters (1995)] explicitly notes that (7-a) and (7-b) are almost completely equivalent in meaning. In contrast (8-b) has a different very different interpretation when it co-occurs with the verb ta, compared to (8-a). (8-a) and (8-b) do not have this near-equivalence; the difference between the two examples is much greater. There is a similar contrast between (7-c) and (8-c), where in (7-c) the meaning of the verb seems to be more directly predicated by the causative verb joi, ‘make’, whereas in (8-c) there is some sort of semantic difference, it does not have a meaning such as “He made it dead.”/“He caused it to die”.

These distinctions become clearer when we consider a less “adjectival” verb than gyo:h, ‘big’, such as ba, ‘go’, as shown in (9). (9-a-c) correspond with (7-a-c) and (8-a-c).

(9)  

a. ø ba-ke  
   (it) go-PFV  
   ‘It went.’ [Watters (1998)]

b. ba-o ta-ke  
   go-NML become-PFV  
   ‘(we/they it) must go.’ [Watters (1998)]

c. *ba-o joi-ke-o  
   *go-NML make-PFV-3sS
In (9-a), we see that *ba, ‘go’, can work as a verb. In (9-b), however, we see that ‘go’ is unlike ‘big’, but close to ‘die’. When ‘go’ takes the -o nominalization morpheme used with the main Vta, ‘become’, a deontic reading results. ‘Go’ is not identical to ‘die’ in that in only the deontic meaning results with ‘go’, where as both the deontic meaning as well as the ‘turn out to be’ reading can result with ‘die’. (9-c), in which ‘go’ occurs in the context of the analytical causative *jai, ‘make’, is not grammatical, in contrast with its ‘big’ and ‘die’ counterparts in (7-c) and (8-c) where the only noticeable difference is the root of the verb such as in (7-c). Instead, an analytic causative for ‘go’ and non-adjective verbs is required using the verb *pari, ‘send’, as shown in (9-d).

We can further see a distinction between the two nominalizations as evidenced by the alternations in grammaticality shown in (10).

(10) a. *baɔi gyoɔh-wo
   very big-NML
   ‘very big’ Watters (2002)

b. *baɔi ba-o
   *very go-NML
   *‘very gone’ Watters (2002)

c. *baɔi si-u
   *very die-NML
   *‘very dead’ Watters (2002)

Intensifiers such as ‘very’ can co-occur with “adjectival” verbs such as gyoɔh, as shown in (10-a), but not with verbs that aren’t part of that class as shown in (10-b-c); that there is this distinction is in line with the fact that these are two different sorts of nominalizations.5

We have so far established that there are at least two sorts of nominalization in Kham, one

---

4Interestingly, this verb seems to work similarly to English ‘make’, as it’s also the word one would use to say something is being constructed, or otherwise brought into being.

5If the adverbial is nominalization-internal or -external is beyond both the scope of this paper as well as my data.
which I will call ‘type 1 nominalizations’, occurring only with an “adjectival” subclass of verbs, the
other, which I call ‘type 2 nominalizations’, occur both with that subclass as well as other verbs
outside of that subclass, and are claimed by Watters to be a relative clause. More evidence that
subject relative clauses/type 2 nominalizations are not adjectivals, even though they can have the
same surface form of a nominalized adjectival, comes from the following distributional contrast.
Were it the case that these had the same syntactic distribution, we would expect subject relative
clauses to be able to appear to the right as well as to the left of the root/core noun in a DP, or, in
other words, the slot which is unambiguously a noun, in a similar way to type 1 nominalizations.
(11) provides evidence that this is not so.

(11) a. [no ŋah-daŋao [ŋa-zihm-kə hū:-wo] gyo:h-wo mi:-ni] 
   that before-ALLT-NML 1S-house-LOC come-NML big-NML person-DL
   ‘those earlier two big people who came to my house.’

   b. [no ŋah-daŋao [hū:-wo] gyo:h-wo mi:]
   that before-ALLT-NML come-NML big-NML person
   ‘that earlier big person who came.’

   c. *[no ŋah-daŋao [gyo:h-wo] hū:-wo mi:]
     *that before-ALLT-NML big-NML come-NML person
     *‘that earlier big person who came’

In (11-a), the type 2 nominalization, ŋa-zihm-kə hū:-wo, precedes the type 1 nominalization, gyo:h-wo. Unlike type 1 nominalizations, type 2 nominalizations are able to have additional syntactic structure within them, in this case the adpositional phrase ŋa-zihm-kə. This ordering is not the result of some sort of heaviness based constraint on modifier positioning. In (11-b), the type 2 nominalization still precedes the type 1 nominalization, even though the type 2 nominalization does not occur with any additional argument. However, in (11-c), the type 2 nominalization is preceded by the type 1 nominalization, and this sentence is ungrammatical. As shown at the beginning of this section, type 1 nominalizations can be preceded by other type 1 nominalizations. Presumably, if the type 2 nominalization in (11) were the same sort of nominalization as the type

---

6Whether or not this is the same type of relative clause as one which occurs with full subject/object agreement morphology is a question outside of the scope of this paper, but may be treated in my full thesis. Tentatively, no.
1 nominalization, (11-c) ought to be grammatical. This distributional fact seems to be strong evidence that there is a difference between type 1 and type 2 nominalizations.

1.3 Type 2 nominalizations, independent of type 1 nominalizations

In this section, I examine type 2 nominalizations independently of type 1 nominalizations. I establish that they are different from type 1 nominalizations in that type 2 nominalizations can occur with arguments inside them. This section will also argue against Watters (2002)’s classification of these types of nominalization as being equivalent to relative clauses. In addition, I locate another type of type 2 nominalization which Watters (2002) classified as a separate type of nominalization used in certain passive constructions.

I have presented evidence that there is a difference between type 1 and type 2 nominalizations, based on differences in meaning when they occur in copula constructions with the same copula, as well as differences in syntactic distribution of the two types of nominalization with regard to each other. Additionally, and contra Watters’ claims, there are several good reasons to think that they are not relative clauses. However, the strings making up type 2 nominalizations may function in terms of their meaning and distribution within noun phrases in a way similar to familiar relative clauses, they may be something different in terms of their internal syntactic structure. (12) contains examples of type 2 nominalizations.

(12) a. ba-o mi:-r@
go-NML person-PL‘the people who went’ Watters (2002)
b. ba-o-r@
c. no hū:-wo mi:
that come-NML person‘that person who came’ Watters (2002)

There are several things that characterize type 2 nominalizations and distinguish them from type 1
and type 3 nominalizations. Firstly, like type 1 nominalizations with respect to verbal inflection, they do not have any form of agreement morphology with either their subject, as shown in (12), nor with their direct object, as shown in (13).

(13) zihm joi-zya-o mi:
    house make-CONT-NML person
    ‘the person building the house’ Watters (2002)

This contrasts with type 3 nominalizations, in which such agreement would be expected for both subject as well as direct object, assuming that there is a direct object for the verb to agree with. Type 3 nominalizations will be dealt with in more detail in section 1.4. In addition, as shown in (13), aspectual marking is grammatical in type 2 nominalizations, whereas type 1 nominalizations are not grammatical when they occur with aspectual marking.

When type 2 nominalizations occur without another noun that they would modify, they can appear with case marking on them. We can see this in (14), where the nominalized verb ki:, ‘plow’, takes the ergative case marking which its 3rd singular subject would have if present.

(14) a. e:h ki-o-e achi m zihm joi-zya-o
    field plow-NML-ERG today house make-CONT-3S
    ‘The one who plowed the field is building a house today.’ Watters (1973)

As described earlier in section 1, overt morphological case marking in Kham is determined at least in part by discourse-linked principles having to do with definiteness. As we can see in (15), the nominalized verb si, ‘die’, can take objective case marking, which makes it clear that these sorts of nominalization can take all sorts of overt case morphology.

(15) no-e si-o-lai ral-ke-o
    he-ERG die-NML-OBJ bury-PFV-3S
    ‘He buried the one who died.’ Watters (1973)

In addition, (16) suggests that these sorts of nominalization can be the ‘core’ noun of a noun phrase, as they can occur with overt number morphology—type 2 nominalizations are not limited to carrying the meaning of “one”, if they are made plural in the same way that regular
nouns are.

(16) นะ-ก่อ ลิ-ยา-อยา-ลาย ยา-คู-ยา-อย
there-LOC be-CONT-PL-OBJ 3PO-look-CONT-3SS
‘He is looking at those who are over there.’ [Watters (1973)]

Type 2 nominalizations then, seem to function like other nominals, as opposed to relative clauses. It’s not clear if Kham actually has a relative clause construction which is similar to more prototypical types of relative clauses.

There is another interesting phenomenon which suggests that these sorts of nominalizations are, in fact, nominals in the same way that lexical items which are clearly nouns are nominals. This is because when both type 2 nominalizations and clearly nominal nouns co-occur with a first or second person pronoun, both still receive morphological case marking which these sorts of pronouns can’t receive. First and second person pronouns are ungrammatical with ergative case marking when they stand alone, but notice that in (17), the noun ไม่, ‘person/man’, which is most likely part of a noun phrase including แก่, the second person plural pronoun, the entire phrase receives ergative case marking.

(17) แก่ ไม่-ลาย แก่-กลาย-ลาย
1P people-PL-ERG HOG-PL 1PS-3PO-raise-IMPFV
‘We men raise hogs.’ [Watters (1973)]

A similar thing happens, shown in (18) when there is a type 2 nominalization in the position which ไม่ is in in (17).

(18) a. แก่: ไม่-ลาย แก่-กลาย-ลาย
1P NEG-go-NML-PL-ERG 1PS-NEG-receive-IMPFV
‘Those of us who didn’t go didn’t get any.’ [Watters (2002)]

b. *แก่: ไม่-ลาย แก่-กลาย-ลาย
1P NEG-go-NML-PL-ERG NEG-receive-3P:IMPFV
‘Those of us who didn’t go didn’t get any.’ [Watters (2002)]

(18-a) shows subject agreement which agrees with the second person pronoun, and not the nominalization, which would presumable be third person. (18-b) shows that agreement with the third
person is ungrammatical.

All type 2 nominalizations examined this far do not occur with a subject which is internal to that nominalization. However, they do occur with object internal nominalizations. I do not believe this is because only the first is grammatical. Rather, I believe it is a result of Watters (2002)'s analysis of these sorts of nominalizations which leads to this distinction. The following, (19), is an example of a type 2 nominalization which has an internal subject and external direct object.

(19) tē:kya-e o-jōi-wo zihm
shorty-ERG 3SS-make-NML house
‘the house built by Shorty’/‘the house Shorty built’ [Watters (2002)]

In cases where there is a nominalization internal subject, subject agreement morphology appears on the type 2 nominalization. However, as in previously examined nominalizations of this type, there is no object agreement morphology. It is clear that the subject in (19) is internal to the nominalization as that subject, tē:kya, occurs with ergative case marking. Ergative case marking could only be assigned by a verb in this example, as this example does not occur in the context of a full clause.

(20) provides evidence along similar lines. In this example, rather than the subject going missing, the detransitivizing morpheme si appears within the morphological structure of the type 2 nominalization.

(20) aō səih-si-u zɔ
this kill-DETRANS-NML EMP
‘This has been killed’/‘This is a killed one’ [Watters (2002)]

It seems reasonable to assume that a detransitivizing morpheme could only apply if there was space within the nominalization for both subject and direct object. Type 1 nominalizations don’t appear to occur with this detransitivizing morpheme. However, this could also be a result of them generally not being transitive to begin with. But, it is possible for a detransitivized verb to be further detransitivized, as (21).
That this is possible suggests that it is not entirely the transitivity of the verb targeted for detransitivization which determines the grammaticality of these sorts of constructions. There remains much to be said about detransitivization in Kham, but that is outside of the scope of the thesis. The point of (20) is to establish that it is possible for type 2 nominalizations to undergo morphological changes which should be limited to verbal constructions which include a subject position.

1.4 Type 3 nominalizations

In this section I examine another type of nominalization in Kham. This nominalization differs from the previous two types of nominalization examined, in a number of ways. It is similar to the previous two in that it is another instance of nominalization through the /-o/ nominalizer. However, unlike the previously examined nominalizations, these sorts of nominalizations do not appear as modifiers to a noun. Type 3 nominalizations are used for a number of discourse linked reasons in Kham, such as providing background information. They are clearly different from type 1 and type 2 nominalizations in that they appear with both subject and object agreement morphology. Most distinctly, type 3 nominalizations are grammatical sentences, occurring with DPs for a subject (and an object, in the case of transitive verbs). In addition, there is a phonologically overt disjunctive copula, ma:hke, which can co-occur with type 3 nominalizations, negating the entire clause. These sorts of nominalization are used often in Kham. In the sample that Watters (2002) chooses as being representative of Kham discourse, it’s found that about 25% of nominalization-eligible matrix verbs are actually nominalized.

1.4.1 Non-nominalized clauses

I will start here by giving a very brief overview of Kham clausal syntax, focusing on non-nominalized matrix clauses. It is good to know what the nominalized clauses which this section deals with con-
Kham is generally a strictly SOV language. It exhibits agreement for both subject and object, as shown in (22).

(22) la:-ye sohmlo basma-rọ ya-səi-hke-o
    leopard-ERG three mountain.goat-PL 3PO-kill-PFV-3S
    ‘The leopard killed three mountain goats.’ \textit{Watters (2002)}

In the above sentence, the subject, \textit{la:} is marked with ergative case, the -\textit{ye} morpheme. Kham exhibits a split-ergative pattern, where the split is along person as well as definiteness lines. Third person subjects receive ergative case marking in transitive sentences. First, second, and salient third person objects receive objective case marking in transitive sentences.

In addition to this, Kham freely allows for arguments to be dropped out of a sentence, as is common in languages which have rich agreement morphology on their verbs. For instance, in the following examples, (23), both subject and object have been dropped from the sentence, but the sentence is still grammatical:

(23) a. ba-zya-Ø
    go-CONT-3S
    ‘He is going’

   b. ŋa-ra-poh-zya
    1SS-3PO-HIT-CONT
    ‘I am hitting them.’ \textit{Watters (2002)}

1.4.2 Nominalized clauses

Having established some facts about Kham clausal syntax, I will now return to the type of nominalization which this section is about. The third sort of nominalization which this thesis will deal with is of a radically different ‘size’ than the previously examined type of nominalization. In these sorts of nominalization, a matrix clause verb appears with the nominalizing morpheme /o/.

These nominalizations also occur with both subject and object agreement morphemes, as well as some aspectual morphology. They have the same SOV word order that non-nominalized clauses have, as established in the previous section. These nominalizations can also occur with
DPs preceding them, which can occur with overt case morphology, as in (24-b). Examples of this sort of nominalization are shown in (24).

(24)  

a. sohmlo o-ra-kai-wo
three 3s-3P-eat-NML
‘(It’s the case that) He ate three of them.’ [Watters (2006)]

b. la:-ye sohmlo basma-r o-ra-soih-wo
leopard-ERG three mountain-goat-PL 3sS-3PO-kill-NML
‘(It’s the case that) The leopard killed three mountain-goats.’ [Watters (2006)]

c. ho chyam bahdure ehn o-goh-zya-o
that day Bahdur field 3sS-dig-CONT-NML
‘On that day Bahadur was digging in his field.’ [Watters (1978)]

d. har-r o-ra-piz-zya-o
cow-PL 3sS-3PO-milk-CONT-NML
‘He was milking the cows.’ [Watters (1978)]

The examples in (24) show various amount of words which are internal to the clausal nominalization. This phenomenon is often termed a “stand-alone nominalization”. Such constructions are not limited only to Kham, but are common in some East Asian languages, and in Tibeto-Burman languages specifically. Type 3 nominalizations perform a specific discursive function, being used either to (a) mark unexpected information, (b) mark background information within narration, or (c) as evidenced in the example of (24-a-b), to give meaning similar to English clause-initial "It's the case that...". Nominalized forms in Kham appear to necessarily be interpreted as happening before the speech event. In fact, morphology used to indicate future events are ungrammatical with this sort of nominalization.

[Watters (1978) and (Watters 2002, §16)] both provide an in-depth description of clausal nominalization in Kham. Kham nominalizations of this sort trigger a number of morphological alternations. Compare the non-nominalized declarative matrix verb morphological template and the nominalized matrix verb morphological template as follows. Note also that this is meant as a schematic representation solely for expository purposes and should not be taken to be any sort of theoretical assumption.
The biggest shift between the template for nominalized versus non nominalized declarative verbs is that in the non-nominalized template, third person subject agreement morphemes are suffixed (-o, -ni, -ra for transitive verbs, corresponding to singular, dual, and plural respectively, and null for the third person singular intransitive), whereas in the nominalized template, they are prefixed (o-, ni-, ya- for the singular, plural, and third person in both the transitive and the intransitive, respectively). Another alternation is that in the nominalized form, intransitive nominalizations have subject morphology even when they would not in the non-nominalized form, i.e., when occurring with a third person singular subject. In addition, the object agreement morphology is more regular in the nominalized paradigm than in the non-nominalized paradigm. It appears that differences in the person of the subject, in addition to triggering agreement morphology which corresponds to their person and number values, also appear to trigger alternations in the object agreement morphology of the verb they agree with.

I will lay out these alternations, as follows: In the nominalized paradigm, the third person object agreement morpheme ni- marks third person dual object agreement when the subject agreement morpheme that precedes ni- is singular. The third person object agreement morpheme ra- occurs in the nominalized paradigm when the subject agreement morpheme preceding ra- is not a subject agreement morpheme for the singular; ra- also marks all forms of third person plural object agreement.

In the regular paradigm, the third person object agreement morpheme ni- marks third person dual object agreement when the subject agreement morpheme, whether that morpheme pre-
cedes *ni*- or not, is singular. The third person object agreement morpheme *ra-* occurs in the dual when the subject agreement morpheme is a non-singular first or second person agreement morpheme. The third person object agreement morpheme *yara-* occurs to mark both dual and the plural agreement when the subject agreement morpheme is a non-singular third person agreement morpheme. Finally, the third person plural object agreement morpheme *ya-* occurs when the subject agreement morpheme is the third person singular.

The fact that type 3 nominalizations are grammatical on their own, as a matrix clause, as well as the fact that they can occur with full agreement morphology, is evidence that this sort of nominalization is different from both type 1 and type 2 nominalizations. I will now return to more examples of these sorts of type 3 nominalizations in Kham; here I assume that some embedded nominalizations are the same sort of nominalization as stand-alone nominalizations. This type of nominalization itself always has similar interpretations, whether appearing in an embedded or unembedded context.

One of the questions that arises is whether or not these sorts of type 3 nominalizations are, in fact, nominalizations. In other words, how can we be sure that these are actually nominal in nature? Evidence for this comes from the following example, where the clausal nominalization of the verb *ba*, ‘go’, receives phonologically overt case marking, in this case, the ergative, shown in (27).

(27) o-ma-ba-o-ye kata zə ma-dəi-wo
  3SG-NEG-go-NML-ERG what EMPH NEG-find-3SG-NML
  ‘Because he didn’t go, he didn’t find anything.’ Watters (2009)

This is probably the clearest case of a case marked clausal nominalization in Kham. The nominalization in question is clearly not a type 1 nor a type 2 nominalization, as this nominalization occurs with agreement morphology and other inflectional morphology on it.

Further evidence that these are nominalizations comes from the similarities in distribution with certain types of equative clauses. This construction has been shown before, in (4-a) and (4-b).

Evidence for this comes from an analysis of the mirative which is beyond the scope of this document.
In these constructions, two DPs are equated. Further evidence that these are nominalizations comes from (28).

(28) a. [ao-r@

DP [ŋa-zə-r@

‘These are my children.’ Watters (2002)

b. [gyahm-o syao]DP [ao]DP ð∅?
[red-NML apple]DP [this]DP COP
‘The red apple is this one.’ Watters (2002)

c. [ao]DP zə [gyahm-o syao]DP ð∅?
[this]DP EMP [red-NML apple]DP COP
‘This one is the red apple.’ Watters (2002)

Here we have three examples of these sorts of equative clauses. (28-a) shows the equation of two DPs. (28-b,c) show that there is no restriction on the ordering of the two DPs which occur in these sorts of clause. In addition, (28-c) shows an instantiation of these sorts of clauses with the emphatic particle zə. This particle often occurs in these sorts of clauses, either for emphasis or to delimit the edge of a DP in cases where an ambiguity could otherwise arise. In (28-c), zə, appears, at least in part, in order to keep the sentence from being interpreted as “this red apple”.

(29) a. [noː]DP [μiː]DP zə
[that person EMPH
‘That one is the person.’ Watters (2002)

b. [ŋa-ra-ríːh-wo]DP zə
[1SS-3PO-see-NML EMP
‘I did see them.’ (That I saw them is emphatically true) Watters (1995)

(29-a) is an instance of zə occurring in a sentence final position. This shows that there is no restriction on this when these sorts of clauses occur with two things which are unarguably DPs. (29-b) shows that this emphatic particle can also occur after a clausal nominalization, in a way similar to that of (29-a).

(30) are a series of examples of the disjunctive copula machə. This word states that the two things are not equal to each other.
(30) a. [a-o-ra]_{DP} [nja-ra-r]_{DP} ma:hke
     [this-PL]_{DP} [1s-child-PL]_{DP} NEG.COP
     ‘These are not my children.’ \textit{Watters (2002)}

b. [zihm ge-ja-zya-o]_{DP?} ma:hkə
     house 1P-make-CONT-NML NEG.COP
     ‘It’s not the case that we were building a house’ \textit{Watters (2002)}

c. sî: ma:hkə
     tree NEG.COP
     ‘It’s not a tree’ \textit{Watters (2002)}

(30-a) is an instance of this with two DPs as the arguments taken in the construction. (30-b) is an instance of negation of a clausal nominalization using \textit{ma:hke}. This is not the only way in which these types of nominalization can be negated, as the negative morpheme \textit{ma}- can attach to the verb. In addition, these sorts of negated nominalizations can co-occur with \textit{ma:hke}. (30-c) is notable not only as another instance of \textit{ma:hke}, but also as an instance of a DP which is not a nominalization occurring without a DP paired with it. In this way, it’s similar to (30-b), and, in fact, all other type 3 nominalizations which seem to stand alone. There are no attested examples of two nominalizations occurring in one of these equative clauses. They may be ungrammatical, or they may simply be rarely used constructions that Watters did not think to elicit.

It’s worth noting here that Watters himself has varied in his analysis of stand-alone nominalizations, in regards to them actually standing alone, or if they are embedded in an equative clause where both the verb as well as the other DP in those utterances are both null. Ultimately, in \textit{Watters (1998), Watters (2002), Watters (2006), Watters (2008), Watters (2009)}, Watters argues that these are not necessarily embedded in such a way, and that the language has advanced to a point where they do, in some cases, occur in an unembedded context, with the “same distributional potential as any finite verb” \textit{Watters (1998)}. From this, we can see that even clause level nominalizations really are nominalizations; that they actually do act as nominals in their distribution, except that they can also stand alone, as shown in \textit{(24)}.

I have now shown and examined three types of nominalization in Kham. These three nominalizations have strongly variant amounts of morphological marking as well as functioning in
very different ways. However, they appear to be nominalized by the same morpheme. I will now provide a way of accounting these difference with some modification of the previously introduced framework that this document is working within.

2 Theoretical Framework

In this section, I lay out the theoretical assumptions necessary for a derivation of the nominalizations which this thesis deals with. I assume a minimalist approach to syntax, where structure is built from the bottom-up through recursive application of Merge, in addition, I assume a phase-based approach to syntactic derivation, where elements of the structure are sent to spell-out piece by piece. I also take a Distributed Morphology based approach to morphology, which puts part of the morphological derivation of words in the narrow syntax. Furthermore, I assume a formulation of head structure which dovetails nicely with the adoption of DM, which uses an application of a DM operation in the narrow syntax to derive head-adjunction structures from specifier-head configurations.

2.1 Basic Syntactic Assumptions: Minimalism and DM

For the purposes of this paper I will be assuming a Minimalist framework for narrow syntax from especially Adger (2003), and Chomsky (2000, 2001). I would like to couple this with an exploration of an account for the type of rich morphology seen in Kham that employs the Distributed Morphology (DM) view of syntactic head movement as a word-building device.

To that end, I will assume that head movement exists in the narrow syntax, which is standard for most DM approaches to syntax, since Halle & Marantz (1993) and including Embick (2010). Per Matushansky (2006) and Vicente (2007), I will take head movement to be a two-step operation. First, one head moves to specifier position of another head. Second, another operation, which I will assume to be DM’s Merger, which Matushansky (2006) suggests as a possible option for this
operation, is applied in the narrow syntax.  

I will provide a brief overview of terms used in this paper which are commonly assumed in minimalist accounts of syntax. A feature is a property of a syntactic object. Feature checking is a theoretical device in minimalism which is used to motivate structure building as well as movement. There are several “flavors” of features, which I have assumed per Adger (2003). The first alternation in features I will discuss here are interpretable and unintepretable features. An unintepretable feature requires that there be an interpretable feature which matches in within the unintepretable feature’s checking domain. A checking domain consists of the sister of the head bearing an unintepretable feature, and everything which that sister dominates. An unintepretable feature must be checked before it is Spelled-Out, otherwise the derivation does not converge. One instance of feature checking would be a necessarily transitive verb. This head would bear an unintepretable D feature. If the sister of this verb doesn’t include a D feature, or if no such object is available in the derivation to Merge with this V, then that derivation in question will not converge. When this matching occurs, the head bearing an unintepretable feature is called a probe, and heads which could match it are called goals. For the purposes of this thesis, I will assume that the highest licit goal for a probe is the one between which a relationship is established. In addition, a given head bearing some feature can be a licit goal for multiple probes throughout a derivation.

The second alternation in features which I will discuss is the strong/weak alternation. Features (both interpretable and unintepretable) may be strong or weak. This is used to account for movement effects in syntax. A strong feature must be checked in a more local syntactic relationship. In the system assumed for this thesis, if a strong feature is included in a feature checking relationship, after the feature checking relationship is established, there must be movement of the goal to specifier position of the probe. Both probes and goals can bear strong features. An instance of a strong feature triggering movement in English is in the case of wh-questions. Under this account, a wh-word would bear an interpretable wh feature. Then, there would be a C which would

\footnote{This is as opposed to being a post-syntactic Morphological part of the derivation, as in Halle & Marantz (1993), Embick & Noyer (2001), Embick (2010), etc. Note that many of these works are agnostic as to the exact mechanism of head movement, but assume that it occurs within the narrow syntax. Merger is a separate operation which applies post-syntactically, but which creates similar structures to those created by the head movement operation.}
Merge into the derivation. This C would bear a strong uninterpretable \textit{wh} feature. It would probe the derivation for a \textit{wh} feature. If there is none, the derivation will not converge. If one is found, the uninterpretable feature on that C is checked, and the object bearing the \textit{wh} feature moves to specifier position of C.

The third alternation in features in \cite{Adger} is the valued/unvalued alternation. In my actual proposal, and the derivations related to Kham, I do not make use of this device. As a theoretical device in those derivations, there does not appear to be any reason to use this type of feature. Furthermore, this is used in \cite{Adger} to account for morphological alternations on verbs in English, given that this thesis utilizes DM, there are already tools which can account for these alternations without the necessity of this device. I include this description for completeness. It will also be useful for some of the illustrative examples which I have included in this thesis. Interpretable features can bear features with a particular value. Uninterpretable features can also be uninterpretable. Uninterpretable features, under this derivation, cannot be valued. When an uninterpretable unvalued feature enters into a probe-goal relationship, it also becomes valued.

Merger is an operation used generally in DM to create head-adjunction structures out of two elements in a syntactic structure. For cases of head movement, this would mean that Merger creates a head adjunction structure out of a minimal projection in spec-head configuration with another head. Merger was first used in \cite{Halle-Marantz} to account for English verbal inflection. For instance, V to T movement in English under this formulation of head movement looks like the following:

\begin{align*}
(31) & & \text{TP} \\
& & \text{T}_{\text{pres}} \quad \text{VP} \\
& \quad \text{V} \quad \text{AP} \\
& \quad \text{be} \quad \text{angry}
\end{align*}

The first step involves the movement of the V ‘be’ raising to specifier position of T:
The second step involves the application of Merger, creating a head adjunction structure. Note that since Merger is not an instantiation of Merge, but instead a fundamentally different operation, there is no trace left in the specifier position of T after this adjunction structure is created.

Per the definition of Merger assumed from Halle & Marantz (1993) onward, I assume that Merger can apply in the narrow syntax without triggering a Spell-Out Cycle. This formulation of Merger states that the operation is available in the narrow syntax as well as part of post-syntactic operations which apply to the output of syntax, such as in the grammar’s Morphology component. In addition, I do not assume the strongly cyclic approach to syntax which Matushansky (2006) takes, as it is incompatible with recent formulations of DM, such as Embick (2010), which assume a phase-based approach to syntactic derivation which involves fewer applications of Spell-Out than Matushansky (2006).

In addition, I will adopt a constraint on Merger, derived from Vicente (2007) [p. 48] as follows
Two constituents x and y may undergo Merger iff x and y stand in a spec-head agreement\[9\]

This is needed to limit Merger within narrow syntax, which as formulated by Halle & Marantz (1993) allowed any head to merge with any other head. Under this formulation of head movement, head movement is not so different formally from phrasal movement, in that both involve movement to specifier position, and are motivated for reasons of feature checking. Head movement then differs from phrasal movement by involving a second operation, Merger, which creates head-adjunction structures out of spec-head relations\[10\]

### 2.2 Interaction between phase heads and head movement

In this section, I identify an interaction between the account of head movement I have assumed, per Matushansky (2006), and the phase-based approach to derivation assumed in Chomsky (2001) and Embick (2010). In Embick (2010), all categorizing heads, such as v, n, a, etc, are all instances of phase heads. Embick (2010) also assumes an approach to phase-based Spell-Out like that of Chomsky (2001), where the domain of a given phase P1 is Spelled-Out only when it is contained within some other given phase P2. One thing that arises from this definition of phasehood is that it predicts that movement of a head from a complex head structure created by Merger to a specifier position higher in the tree should be possible, which violates generally accepted bans on excorporation. In addition, Embick (2010) predicts that there are locality constraints on structurally conditioned morphological allomorphy which come about as a result of this phase-based approach

---

9Vicente proposes this for m-merger, which I will take to be DM’s Merger, which is suggested as a possibility for the operation in Matushansky (2006).

10Often, I will often leave out the additional projected heads, noting only the highest head in a sequence of head movements, when the additional projected material isn’t crucial to the issue being discussed. Note also that this reprojection doesn’t apply to higher projections of a head, because those higher projections aren’t involved in the Merger operation. This is because it’s not clear in the literature what head ends up projecting in Merger when it is applied for the purpose of head movement in the narrow syntax, that is to say, for (34), why is it that Z projects over X instead of X projecting over Z. It is often assumed in Halle & Marantz (1993), and other works in the DM literature since then, that the head being adjoined to is that which projects. However, especially since in Halle & Marantz (1993) it is assumed that Merger can also occur after the narrow syntax, when there would be no reason to assume similarities in requirements of projection, the reasoning behind this is never given. In addition, it’s unclear under this line of reasoning what, if any, difference there is between complex heads created through head movement and regular phrases.

11It’s actually unclear here if Embick (2010) assumes that there is not an alternation in phasehood between unaccusative v0 and other v0
to derivation. As such, a modification to the PIC is necessary in order to account for some morphological allomorphy in Kham which is triggered by the presence of a categorizing/phasal head $n$, the nominalizer -o, to which a $v$ head is adjoined as part of the derivation. Under the process outlined in [Emick (2010)], the nominalizing morpheme should not be able to trigger these alternations.

Another question that comes up with this pertains to the interaction of head movement and the phase heads of minimalism, which, when Merged into a structure, trigger Spell-Out of other phases in their domain. Namely, if a head moves and then is subject to Merger with a phase head, given the definition of phases assumed in [Chomsky (2001) and Embick (2010)], i.e., all categorizing functional heads, as well as C, it is unclear why complex heads are closed to movement effects. The formulation of the Phase-Impenetrability Condition which I will take as a baseline for discussion is reproduced as follows:

(35) **Phase-Impenetrability Condition** [Chomsky (2001)]

i. The domain of $H$ is not accessible to operations at ZP ($Z$ a strong phase head); only $H$ and its edge are accessible to such operations.

ii. The edge being the residue outside of $H'$, either specifiers or elements adjoined to HP.

A problem arises in derivations where, given two heads $X$ and $Y$, where $X$ is a phase head, and $Y$ undergoes head-adjunction to $X$ in the course of the derivation. Since a phase head will still be active in the derivation, such head movement would predict that a head adjoined to a phase head could be subject to movement out of the complex head adjunction structure—this breaks a commonly assumed ban on excorporation from heads. $Y$ is not in the edge of $X$, but should still be active in the derivation given that $X$ is also still active in the derivation. Because of this, it seems to me that $Y$ could be goal of some probe of a strong feature, and presumably could be subject to Merger after that. This predicts that excorporation should be possible, which is undesirable. For instance, under the assumption that English $n't$ is a Neg head to which an auxiliary head-adjoins, this would predict the following sentence to be licit:

(36) *Has John n’t been here before?
Where the auxiliary *has* is the target of movement. To avoid this, I propose that a head adjoined to another head through Merger is in the domain of that head. This will ultimately be crucial in order to account for certain contextually based morphological alternations in Kham. As such, I propose the following amendment to the PIC, so that (37-iii) as follows would be added to Chomsky (2001)'s original formulation:

(37) **Phase-Impenetrability Condition (Proposed Reformulation)**

i. The domain of H is not accessible to operations at ZP (Z a strong phase head); only H and its edge are accessible to such operations.
ii. The edge being the residue outside of H', either specifiers or elements adjoined to HP.
iii. A head x adjoined to a strong phase head H by Merger is in the domain of H.

Under (36), from the structure:

\[(38)\]

\[\begin{array}{c}
\text{XP} \\
\langle X,Z \rangle & \text{YP} \\
Z_i & X & ZP & Y \\
\end{array}\]

The following structure is predicted to be possible, where A is also a strong phase head:

\[(39)\]

\[\begin{array}{c}
\text{AP}[uZ\neq] \\
\langle A,Z \rangle & \text{XP} \\
Z_i & A & \langle X,Z \rangle & \text{YP} \\
\end{array}\]

\[\begin{array}{c}
t_i \\
X & ZP & Y \\
\end{array}\]

However, under (39), Z would be subject to Spell-Out, and would not be a licit goal.
2.3 The workings of Hierarchies of Projection

In addition to this, I will place more of the syntactic derivation in the hands of the so-called functional sequence, or Hierarchy of Projection, which originates in the work of Starke (2001). This is also assumed in Adger (2003), under the term “Hierarchy of Projection”. The Hierarchy of Projection is a stipulated sequence of functional head projections, for instance, T, Neg, v, and V. This Hierarchy can motivate the next head in the sequence to be Merged into a syntactic structure wherever that head is in the Enumeration and there are no feature-checking needs that would motivate internal or external Merge.

This sequence can motivate external Merge, which in minimalism is the operation responsible for the basic building of syntactic structure. I will assume for the purposes of this paper that Hierarchy of Projection-motivated external Merge is secondary to Merge motivated by feature checking (whether internal Merge, which is essentially movement, or external). By this I mean that it is preferable in the Syntax to check features rather than to fulfill the Hierarchy of Projection. Under this assumption, external Merge is preferred over internal Merge to check features, and feature checking-motivated Merge is preferred over Hierarchy of Projection-motivated Merge in general. This means that Hierarchy motivated-Merge will happen only when all strong features in the derivation have been checked. However, this Hierarchy-motivated Merge may introduce further unchecked features into the derivation, if the object which enters the derivation as a result of this merge bears unchecked features, which can in turn motivate further feature checking-motivated Merge. This seemingly stipulative device seems preferable to an account of heads bearing wildly varying features which just happen to converge. Something similar to the Hierarchy of Projection is introduced into many frameworks, usually through some sort of “coincidental” feature checking; here, I adopt this formal device, thus simplifying the amount of feature checking necessary to do a derivation in the framework.

Adger (2003) introduces this device to account for the English auxiliary system. For in-

---

12 Adger sometimes uses the term “Hierarchy of Projection” and, at other times, “Hierarchy of Projections” to refer to this device. I will use “Hierarchy of Projection” in this thesis to refer to this device.
stance, adopting a Hierarchy of Projection as follows, shown in (40), which is used in Adger (2003):

(40)  \( C > T > (\text{Neg}) > (\text{Perf}) > (\text{Prog}) > (\text{Pass}) > v > V \)

The derivation for a simple example like (41) would proceed as follows, glossing over the derivation of the DP *pizza* for now, so that we can focus on the workings of the Hierarchy of Projection.

(41)  John must be eating pizza.

First, a V, *eat* and the DP containing *pizza* are Merged:

(42)

```
VP
   V[Null]
    eat
   DP
    pizza
```

The uninterpretable D feature on V is checked, which is the reason why V projects. All features in the derivation are now checked, and so Hierarchy of Projection-motivated Merge now occurs. \( v \) is to be Merged to V, since \( v \) is the next element in the Hierarchy of Projection:\footnote{\( v \) in gloss over phases here, and focus on the Hierarchy motivated Merge. Depending on which formulation of phases being used, at this point, either everything contained in DP (Chomsky 2001) or everything contained in VP (Chomsky 2000) would be spelled out at this point.}

(43)

```
v[uV*,uD*,uInfl: ]
  VP
    V[Null]
     eat
    DP
     pizza
```

\( v \) moves to \( v \), in order to check the uninterpretable strong V feature on \( v \). \( v \) also bears an uninterpretable D feature, which will be checked by the Merge of a DP which will be the subject of the sentence. \( v \) also bears an unvalued uninterpretable Infl feature, which will be later valued by some other head higher in the derivation.
The \([uD^*]\) feature remains to be checked on \(v\). Members of the Hierarchy of Projection are also part of the Lexicon, and are part of the Enumeration of a given derivation. The features they bear are assigned in the same way that they are to lexical items which aren’t members of a Hierarchy of Projection. At this point, since the subject has not yet entered the derivation, the DP \(John\) is therefore Merged into the derivation to check the features of \(v\). Since \(v\) checks its features, it also projects. Since all strong features on \(v\) are now checked, this \(vP\) is now considered a maximal projection.

Therefore, the Hierarchy of Projection next motivates the Merge of Prog. Because Prog is higher than \(v\) on the Hierarchy of Projection, it projects within the structure.
Since Prog has no unchecked strong interpretable features, the derivation has again formed a maximal projection. The merging in of Prog caused its feature [prog] to value the uninterpretable inflection feature on v as [prog]. This will ultimately be pronounced as [-ing]. Because the feature on v is weak, uInfl: on v is checked in a non-local relationship and is valued as [prog].

Next, since no unchecked strong features remain in the tree, the modal T, must is Merged into the derivation, motivated by the Hierarchy of Projection:
Because T is higher than Prog on the Hierarchy of Projection, T projects. The Infl feature on T values the unvalued feature of Prog. The strong uninterpretable feature \([uD^*]\) on T matches the D feature of John. T c-commands John, and there is no closer D which T also c-commands, meeting the locality requirements needed to check a strong feature, in this case, the \([uD^*]\) on T. So, John moves to specifier position of T, checking \([uD^*]\). Here, Merger does not apply to the DP containing John, since it is not a D0 projection.

Since T checked its features, it also projects. Note that checking of a feature, strong or weak, is enough to allow a node to project, as shown before in the Merge of V and its internal DP.
argument. Finally, a C is Merged, motivated by the Hierarchy of Projection, and since it is higher on the Hierarchy, it projects over T.

(50)

```
      CP
     /   /
    C     TP
   /\    /\  
  DP_j  T  
     /\   /\  
    John T[\uD*, Infl:Bare]  ProgP
       |   |          
      must  Prog[prog, uInfl:Bare]  vP
                /\  /\  
               t_j vP  vP
                      /\  /\  
                     v[\uV*, uD*, uInfl:prog]  VP
                      /\  /\  
                     V[\uD], t  t_i DP
                        /\  
                        eat pizza
```

The derivation concludes at this point, since the enumerated elements\(^{14}\) are exhausted, and all features in the tree have been checked. In short, the narrow syntax moves heads and phrases, in the same way, creating the same sorts of structures with the same architecture. The difference between heads and phrases is only relevant to operations during narrow syntax; at the morphological layer of the derivation, which occurs immediately after the narrow syntax, they are exactly the same.

### 2.4 Distributed Morphology

Distributed Morphology, originating with the work of Halle & Marantz (1993), with some of the assumptions and work that would lead to its development stretching back even further. It has been continued, adopted to varying extents, and modified by many in the field of syntax, since then, approximating 20 years. In the last 10 or so years, this approach to morphology has become more fleshed out and less stipulative, providing a robust approach to word formation in a way unified

\(^{14}\)In the enumeration for this derivation, all the elements in (50) were included, and no other elements were.
with syntax. In this section, I will first lay out a brief description of Distributed Morphology (DM) as it is commonly approached. I will then note the departures from the standard DM model I will be adopting for the purposes of this paper.

Kham is a language with a very complex morphological system. The argument put forward in this thesis is one argument in favor of an approach to syntax where much of the morphological computation is handled syntactically. The Distributed Morphology approach that I develop here utilizes more recent developments in this line of analysis while still keeping some of the original mechanisms that define the approach for handling the complex morphosyntax of this language. It seems to me that a syntax-based approach towards word formation is the most promising tack for a language which is this morphologically rich.

A few things about the DM account argued for here are relatively novel. First, many Distributed Morphological analyses do not deal with languages that are as morphologically complex as Kham. The success of the account proposed here shows that DM is not only able to account for such complex data, but also that the details of the account raise interesting issues for Distributed Morphology as a theory more generally. Nominalizations in general have attracted interest in the generative tradition since at least [Chomsky (1970)]. In addition, the topic of nominalizations in a Distributed Morphology framework has not been dealt with much outside of the English language, despite the fact that nominalizations are used pervasively in many Tibeto-Burman languages, with Kham using them to an exceptional degree even for its family. This analysis will attempt to shine some light on nominalization structures in Kham which will in turn have crosslinguistic implications for the nature of nominalizations more generally.

An overall sketch of the derivational process in DM is as follows:
In the rest of this section, I’ll talk through the various mechanisms involved in this diagram. Readers more familiar with DM should feel free to skip to section 3.

In DM, the phonological representation of syntactic heads does not enter the derivation except as a process of Spell-Out: Distributed Morphology assumes late insertion, as does much work in contemporary minimalism. Syntactic non-root heads are thus viewed as abstract bundles of features, while roots are category-neutral and generally open class and thus correspond generally to non-functional/“lexical” words or morphemes. Embick & Marantz (2008) propose a constraint on Roots, such that they must Merge with some functional categorizing head, as follows:

\[(51) \quad \text{Categorization assumption} \]

Roots cannot appear (cannot be pronounced or interpreted) without being categorized: they are categorized by merging syntactically with category-defining heads. If all category-defining heads are phase heads in Chomsky (2001)’s sense—that is, if they are heads that initiate spell-out—the categorization assumptions would follow from the general architecture of the grammar (see Marantz (2001)). Embick & Marantz (2008)

LATE INSERTION, in short, means that there is no phonological information in the narrow syntax.
This has the result of removing phonology from the syntax; this is viewed as a good thing. Were phonological information available in narrow syntax, it could be expected that this information could enter into goal-probe agreements and trigger movement. If phonological material is in the narrow syntax, we might expect to find a language where movement of only words starting with /a/ happens—to my knowledge, this doesn’t occur in natural language. To my knowledge, there are no languages where there is phonologically triggered movement.

As a result of this, what was previously one unified lexicon is distributed across three lists—a list of morphosyntactic features; the Vocabulary, which links phonological information to feature sets; and the Encyclopedia, which links Vocabulary items to non-linguistic knowledge. Also as a result of this, syntactic structures in a DM approach are assumed to be ordered only hierarchically; the linear order is derived from this hierarchical structure at Spell-Out through linearization processes.\textsuperscript{15}

The first list is the set of abstract syntactic features\textsuperscript{16} which are selected by the Numeration and manipulated in the syntax. For instance, this list could contain features for tense, features for person and number, features for aspect, and so on. The second list is the Vocabulary, which is a set of relations between strings of phonological information and sets of syntactic features, such as those in the first list. This list is accessed at Spell-Out, where these Vocabulary Items\textsuperscript{17} compete for insertion.

It can be noted here that the way that Roots receive their phonological content is and has been an open question since Halle & Marantz (1993). Most DM literature does not attempt to answer this question, as it often lies outside their core focus. Halle & Marantz (1993) propose that there is some other mechanism through which Roots are associated with phonological material, since roots are assumed to be completely category-free, so that any root can be inserted in any root.

\textsuperscript{15}See Embick & Noyer (2001) for one account of linear order in DM, or Bye & Svenonius (2011) for a linearization protocol based around Kayne’s LCA and Brody’s Mirror Principle in a non-standard DM framework.

\textsuperscript{16}Technically, a set of sets of abstract features, given that the bundles of features which correspond to nodes are not hierarchically ordered. In a Nanosyntactic approach, the first list would presumably consist solely of those features which are then ordered in the syntax.

\textsuperscript{17}A Vocabulary Item is a single relation between a string of phonological information and a set of syntactic features; the Vocabulary is a list of the entire set of Vocabulary Items.
node. While Embick & Noyer (2001) follow this view, Embick (2010) proposes that roots do carry some sort of features, which determine the context in which they can be inserted; this is necessary for transitive verbs, and is also used to account for certain variations in Latin verbs. Pfau (2009), in his DM account of spontaneous speech errors, proposes a model of enriched roots, where roots are connected to some conceptual features. This is also adopted by Siddiqi (2009). Pfau’s approach is one of the more widely adopted approaches to roots in recent DM approaches, and will therefore be the approach I adopt here.\footnote{See Acquaviva (2009), Harley (2011) for a more recent treatment of the nature of roots as well as the theoretico-historical treatment of roots in DM.}

There is a distinction between the entries from the first list of syntactic features and entries of Vocabulary Items from the second list in terms of how the latter are associated with terminal nodes, with roots and non-roots working differently. In contrast to the variation just described within DM on when and how Roots receive phonological content, Early DM work including Halle & Marantz (1993) is explicit in viewing non-roots as receiving phonological information at PF. Later DM varies on where roots receive phonological information, and how. The Vocabulary was subdivided into lists which then “automatically organize themselves into blocks . . . where entries are ordered by the principle that the most specified entry takes precedence over entries that are less specified” (Halle & Marantz 1993). Under this account, as well as most accounts since then, use a form of the Subset Principle to determine which entry is most specified. Halle (1997) proposes the Subset Principle as the guiding principle behind competition, which is a more formal statement of this competition:

\begin{equation}
\textbf{The Subset Principle}
\end{equation}

The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the syntactic features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

Halle (1997)

For instance, in English the phonologically null verb agreement morpheme would bear less features
than the agreement morpheme for the third person singular verb agreement morpheme -s, with both being in competition to be inserted in the same node. The second would be inserted on nodes with a third person feature and a singular feature (and appropriate tense features, however one decides to encode those), since it is more specific than the first—more specific meaning that it is associated with more features. The first would be inserted when there’s no third person feature and/or no singular feature on the node, even if there are other features on that node. It could associate with a node bearing first person and a plural feature (and however one wishes to encode tense), because there would be no clash of features between the feature set of the Vocabulary Item and the feature set of the node. Another example would be articles the and a, where the feature bundle that associates with the phonological string /a/ doesn’t have a definiteness feature in it, whereas the phonological string /ðə/ is associated with a feature bundle with a definiteness feature in it; these two VIs are in competition for the same node.

(53) a. \([\text{def, D}] \leftrightarrow /ðə/\)
    b. \([\text{D}] \leftrightarrow /a/\)

So, for competition with a D node, both are under consideration for insertion. If the node had a [def] feature on it, (53-a) would be more specified than (53-b), and would win out and be inserted. If the node didn’t, (53-a) couldn’t be inserted, because it contains features not present on the terminal node. I will note here that there is an assumption dating back to Halle & Marantz (1993) that the features that terminal nodes consist of are universal to human language; as a result, it is (conceptually) possible that a language could have terminal nodes where some features in the set of features of that node do not associate with any of the Vocabulary Items which can spell out that node\[^{19}\]. For instance, if one were to posit some features which are present in the syntax, which trigger some syntactic effect, but never result in morphological alternations, those features would still be visible to Vocabulary Insertion—the lack of different phonological forms is simply because

\[^{19}\text{Interestingly, there is no constraint that necessitates that any of the features in a bundle associate with that of a Vocabulary Item, in that it is theoretically possible for a derivation to occur where the intersections of the set of features on a node and each Vocabulary item is empty.}\]
no Vocabulary items associate with those features.

When a syntactic feature has been matched with a Vocabulary Item in DM, this feature is considered to be discharged, and is no longer visible to morphology. This is necessary for many accounts of fission, in order to prevent multiple Vocabulary Items being associated with a single feature. The question then comes up as to what happens if there is a tie, as there can be one and only one way that a given node receives phonological material. What to do in this case is either stipulated, such as in [Halle & Marantz (1993), which relies on a language specific ranking of Vocabulary Items in addition to the Subset Principle, or the result of a universal feature hierarchy, as proposed by [Harley (1994). Belder (2011b)]20 proposes a solution to this in outlining a refined version of the Subset Principle with a more formal definition:

(54)  The Revised Subset Principle
Given a terminal node A with feature set \( F_0 \) and Vocabulary Items \( /B_{1,2,\ldots,n}/ \leftrightarrow F_{1,2,\ldots,n}, \) where each vocabulary item consists of phonological information \( /B_n/ \) and is associated with a feature set \( F_n: \)
\( /B_i/ \) is inserted in A if \( F_0 \times F_i \subseteq F_0 \times F_0 \). When several Vocabulary Items meet this condition, the one for which \( F_0 \times F_i \) most closely matches \( F_0 \times F_0 \) is chosen, where most closely matches means that the set of features in \( F_0 \times F_i \), which is the Cartesian product of the feature set of a VI and the targeted node has the greatest number of matching pairs to the Cartesian product of the targeted node and itself.

Belder (2011b)

This account makes the same predictions as the earlier formulation of the Subset Principle. However, it also accounts for the insertion of Roots, which are assumed to be featureless and are inserted in the same way as other Vocabulary Items, their corresponding phonological information being associated with a node which is featureless. We now have a working definition of the Vocabulary in DM.

The third list in DM is the Encyclopedia; this consists of a variety of learned “real world” information, such as that the root \( \sqrt{cat} \) Merged in the context of a nominal structure refers to a small, cute, furry, feline with four legs, etc., as well as the interpretations for idioms.

20See this paper also for an account of Root phonological conditioning with truly featureless Roots unified under Vocabulary Insertion.
So far, then, Distributed Morphology assumes that there is a distinction between Roots and Non-Roots, and that phonological information is not available to the narrow syntax, with terminal nodes being bundles of features which later receive phonological information. Another major assumption of DM is that there is a layer of processing in between the narrow syntax and PF. There are several things that can happen within this morphological layer, and all such processes operate on the output of Syntax: they occur post Spell-Out, but before PF. In Halle & Marantz (1993), five such processes are outlined: MERGER, FUSION, FISSION, IMPOVERISHMENT, and the association of dissociated morphemes. However, the utilization of these various processes within the DM literature itself is highly varied; Fission, Fusion, and Impoverishment are less utilized than Merger and the association of dissociated morphemes.

2.4.1 Two Important Operations: Association and Merger

I will now turn to the two operations, the association of dissociated morphemes and MERGER. The concept of dissociated morphemes in Distributed Morphology originates in Halle & Marantz (1993). Dissociated morphemes are morphemes that are realized phonologically but are not visible in the syntax; these are most generally agreement morphemes, as well as case morphemes, for some languages. This does not mean that Distributed Morphology assumes that structural Case does not exist, but rather, that there is not necessarily a strict mapping between structural Case and morphological case marking. Dissociated morphemes may reflect syntactic properties, but they do not themselves contribute those properties into the syntax. For instance, in German, a case morpheme could be associated with a D head post-syntactically, as a result of language-specific well-formedness conditions. In general, it is also assumed in many DM accounts that there is some sort of process through which features, such as person and number, are copied from syntactic structure onto associated morphemes. The insertion of dissociated morphemes occurs early in the application of morphological processes, after the narrow syntax, in the Morphological part of the grammar, such as Fission and Fusion, and before Vocabulary Insertion. This process is as follows:
Dissociated Morpheme Association

When a node marked to trigger the association of a dissociated morpheme is in the derivation, affix the indicated dissociated morpheme to the triggering node.

I will assume here that nodes are marked for association in a language-specific way.

I will also assume a locality constraint on this process as follows:


A dissociated morpheme must be inserted as the sister of the node which triggers its insertion.

I assume this in order to tightly constrain possible dissociated morpheme association rules. This assumption, based on commonly assumed restrictions based on locality, is both simple and plausible, as it falls in line with other assumptions of locality within syntax.

The insertion of dissociated morphemes is not assumed to be a general process that occurs in the same way for all languages. Instead, the particular nodes that trigger association and what features get copied onto that node are language specific. For instance, Harley & Noyer (1999) gives Dutch adjectival endings as an instance of dissociated morphological context, which is inserted post-syntactically as a right adjunct to adjectives.

As has been already mentioned in the overview of DM and at the start of section 2.1 above, Merger is a central mechanism of DM. It allows for X^0 level categories to adjoin together, creating a single syntactic head. MERGER, was first formulated as follows, when it appeared in the DM literature:

Morphological Merger: Halle & Marantz (1993)

At any level of syntactic analysis (D-Structure, S-Structure, phonological structure), a relation between X and Y may be replaced by (expressed by) the affixation of the lexical head of X to the lexical head of Y.

In Embick & Noyer (2001), it is proposed that Merger acts differently when it is applied in different stages in a derivation. When MERGER applies before Vocabulary Insertion, it operates on hierarchical structure; when it is used after Vocabulary Insertion, it operates in terms of linear
adjacency. These two types of Merger are as follows:

(58) a. **Hierarchical Merger**
\[ [XP \cdots [YP \cdots Y_0 \cdots ]] \Rightarrow [XP \cdots [YP \cdots [Y_0 X_0 + Y_0] \cdots ]] \]
Where + denotes a sister relation

b. **Linear Merger**
\[ [X * [Z * Y]] \Rightarrow [[Z_0 Z+X] * Y] \]
Where a*b denotes that a linearly precedes b and is adjacent to b.
Where + denotes that Z immediately precedes X

Embick & Noyer (2001)

Merger, in Halle & Marantz (1993), was only utilized hierarchically, and was the rule which would explain T lowering to V in English. It is also used in Embick & Noyer (2001) to explain second-position clitic phenomena, as well as the positioning of the Latin conjunctive enclitic -que, as an application of Linear Merger. For instance, the following:

(59) bon-i  puer-i  bon-ae-que  puell-ae
    good-NOM.PL boy-NM.PL good-NOM.PL-and girl-NOM.PL
    ‘good boys and good girls’ Embick & Noyer (2001)

is assumed to be underlingly:

(60) [ [ bon-i puer-i ] [ -que [ bon-ae puell-ae ] ] ]

With Linear Merger being applied, which accounts for the surfacing word order.

In addition to this, Halle & Marantz (1993) also assumes that there are readjustment rules with contextual restrictions on them which occur after Vocabulary Insertion, which are often used to account for some forms of stem suppletion. I will also assume readjustment rules as part of my framework.

### 2.4.2 Fusion

Within the three less-utilized DM processes, Fusion is a structure-altering process as follows.

This is a formalization of my own devising, based on Halle & Marantz (1993).

---

21 For a treatment of Fusion in contemporary DM, see Kandybowicz (2007).
(61) **Fusion**

Given terminal nodes X, Y where X, Y are sisters with corresponding feature sets \( F_x, F_y \):
Remove terminal nodes X, Y from the structure, output a new node \( Z \) with a feature set \( F_z = F_x \cup F_y \) that respects relations of dominance of X, Y, i.e. has the identical mother as X, Y.

Fusion is used in [Halle & Marantz (1993)](#) to account for a single morpheme realizing both Number and Case nodes, such as in Latin, Latvian, and Russian, which are assumed in this account to be separate nodes. In contrast, Turkish, where there are separate case and number morphemes, it is assumed that this is because, in Turkish, there is no rule requiring Fusion between Case and Number nodes.

Another instance of fusion, here using an example from English, given the following syntactic structure, as in [Halle & Marantz (1993)](#):

(62)

Under this account, Agr is a dissociated morpheme inserted post-syntactically. There is then a fusion rule which is applied to the two nodes, resulting in the following:
This single node is then under competition for a variety of different Vocabulary Items.

2.4.3 Fission

Fission is somewhat the opposite of Fusion. It was originally proposed in Noyer (1992), but adopted into DM from the outset. It is used to account for morphological phenomena where more than one phonological exponent realizes a single terminal node. A classical example of this sort of data, account for using Fission in Halle & Marantz (1993), is a set of clitics in Georgian. Fission works as follows:

(64)  Fission
For morphemes marked with Fission, the initial step of the (Vocabulary) insertion procedure is identical with that sketched above, but this is not the end of the procedure. Simultaneously with insertion of the phonological exponent, a subsidiary terminal morpheme is generated into which are copied the features—if any such remain—that have not been required for (matched in) the first step. This subsidiary morpheme is then itself subject to Vocabulary insertion in the usual manner. . . Insertion may or may not stop after a single iteration. No further iterations take place if among the items competing for insertion in the original morpheme there is an absolute default item, i.e. one that is inserted without having to match any features in the terminal morpheme. If there is such an item, Insertion stops after a single iteration, if not, iteration continues until the features copied into the subsidiary morpheme match no Vocabulary item.
The theoretical status of Fission is somewhat up in the air at the moment; see Poot & McGinnis (2005) for arguments against Fission as proposed above, as well as a reformulation of Fission that puts it in line with more current DM theory as well as accounting for verbal agreement patterns in Yucatec.

An example of fission in Kham has to do with dual agreement morphology, as well as some dual pronouns. I assume that the dual forms, in Kham, are heads bearing both singular and plural features. Given a D head as shown in (65) and a partial Vocabulary List as shown in (66), a derivation at MS would proceed as follows.

(65) \[ D_{[1, \text{sing}, \text{pl}]} \]

(66) \(<\text{sing}> \leftrightarrow /n/ \]

\(<1, \text{pl}> \leftrightarrow /ge/ \]

During Vocabulary Insertion, since /ge/ best matches the features of the head, it is inserted into that node, as shown in (67)

(67) \[ D_{[*, \text{sing}, \text{pl}]} \]

\(/ge/ \]

Fission then applies to the node in question, resulting in (68).

(68) \[ D_{[*, \text{pl}]} \]

\(/ge/ \quad D_{[\text{sg}]} \]

This new node is then subject to Vocabulary Insertion, as it is a licit insertion target for the Vocabulary Item which is associated with only a [sing] feature. (69) is the output of this Vocabulary Insertion.
2.4.4 Impoverishment rules

Impoverishment is used to account for morphological syncretisms. One set of data accounted for through impoverishment rules are some restrictions on subject and object agreement clitics in Eastern Walbiri, where an impoverishment rule prevents a dual subject clitic from being followed by a dual object clitic. The intricacy of this data prevents me from giving a full account here, see [Halle (1997)] for an account of Walbiri agreement clitics which includes this impoverishment rule as part of the analysis. Applications of Impoverishment occur before Vocabulary Insertion occurs. Impoverishment acts on a terminal node of syntactic structure, deleting features within that node as follows:

(70) \textit{Impoverishment}

Given a terminal node X with a feature set \(F_x\) consisting of features \(f_1, f_2, \ldots, f_i\) and some set of features to be deleted \(D\):

Set \(F_x\) equal to \(F_x - D\)

Notably, there are accounts of Impoverishment where Impoverishment can add features in addition to deleting them, see [Noyer (1998)]. This is necessary to account for certain morphological alternations between Nimboran dual and plural agreement clitics. The status for phonological realization through Vocabulary Insertion of a featureless node, which hypothetically could be created given that there is no limit on the amount of features that can be deleted by \textsc{impoveryishment}, is unclear. Presumably such a featureless node would either receive no phonological realization and be invisible at PF (but still available to condition certain types of contextual allomorphy, or will receive phonological realization from some morpheme that is specified for “all other cases”).
2.5 Putting this together

I will now provide a derivation of a sentence in Kham under this framework.

\[(71)\]
\[
\begin{array}{ll}
\text{gi-n-Ø} & \text{gi-n-ba-ke} \\
1-\text{DL-ABS/NOM?} & 1\text{DS-DL-go-PFV} \\
\end{array}
\]

‘Us two went.’ \cite{Watters1998}

For now we will assume a Hierarchy of Projection: C > T > Asp > Voice > v

As noted before, this Hierarchy can motivate Merge, and also constrains dominance relations in a derivation. Voice here comes from \cite{SailorAhn2010} and is used to introduce external arguments\footnote{I will note here that \cite{Watters2002} claims that Kham has a split-ergative case marking system, based on discourse saliency. It is not totally clear to me if Kham is syntactically ergative.} The Voice head given in \cite{SailorAhn2010} is a synthesis of Kratzer’s proposed Voice head, as well as later proposals of Voice heads—it is a singular head “which modulates all grammatical voice alternations, by introducing an external argument (or not) and triggering predicate inversion (or not).” \cite{SailorAhn2010} Variations on the features that this head bears allow for an elegant account of active, passive, middle, and unaccusative variations of a verb, though this is not crucial to this particular derivation.

The derivation in the narrow syntax goes as follows. Initially, a root is Merged with a category defining head v, to which it is incorporated\footnote{This assumption isn’t crucial to the derivation in question; the head does allow for an elegant account of passives and middle marking which is outside the scope of this paper.}

\[(72)\]
\[
\begin{array}{l}
vP \\
\sqrt{v} \\
\sqrt{v} \\
\end{array}
\]

The aforementioned Hierarchy of Projection drives Merge of the functional skeleton of the CP. Head movement of v to Voice, then of Voice to Asp, then from Asp to T, proceeds as a result of feature checking driving movement followed by application of Merger.

\footnote{Presumably, this can trigger the application of Merger that is responsible for head movement; optionally it could move vacuously to spec-v and then Merger could apply; the exact details of feature categorizing heads with respect to roots in the narrow syntax is not the focus of this paper.}
Here, the Voice head has been Merged into the derivation, per the Hierarchy of Projection. Head movement has occurred of \( v \) to Voice, as a result of the strong feature on Voice. Importantly, the label of the structure outputted by Merger of the \( v^0 \) head to the Voice head leaves all features of the constituents visible, as stated in the previously proposed output of Merger in the narrow syntax.\(^{25}\)

Next, a DP bearing person and number features enters the derivation, to check the uninterpretable D feature on Voice.\(^{26}\)

Note here that the \( l \) on the DP node is an index. This index is not the result of any sort of movement, and I have included it for expository reasons, to indicate which head a feature copying operation has applied to later in the derivation. Here, I assume that pronouns, even when they occur alone, have complex internal structure such that they are phrasal. The D with a feature bundle \([1, \text{sing, pl}]\) is Merged into the derivation, triggered by feature checking requirements of Voice. As I described above, head movement of \( v \) to Voice precedes the Merge of this D, thus preserving the minimality

\(^{25}\)Matushansky (2006) also notes something similar, that the output of Merger is, to the narrow syntax, a bundle, but is structured at the morphological level. My formulation of Merger in the narrow syntax accounts for this.

\(^{26}\)As we will see in section 4, if this object is a minimal projection, then there are certain operations which could apply to would have meaningful consequences to the derivation. In particular, this could be part of a more principled account of the ordering asymmetry between first and second person agreement prefixes and third person agreement suffixes in Kham. I do not rule this out as a possibility, but do not assume this for the purposes of this thesis.
constraints on head movement that are established in [Sailor & Ahn (2010)].

All features have been checked on Voice, so the Hierarchy of Projection motivates the Merge of Asp. The complex Voice head, which includes $v$, undergoes head movement to Asp, to check the strong uninterpretable $v$ feature on Asp.

(75)

```
AspP[uv*]
   VoiceP[uD*,uv*]
      DP[1,sing,pl],l
            Voice k
                  t
                        v
                      j
             vP t_k v_j Voice
                  t_j t_i \sqrt_i v
```

When T is Merged into the derivation, the same thing happens as it does with the Voice head. In Kham, I will assume that T is a node marked for the insertion of a dissociated subject agreement morpheme, and that the features that this morpheme will bear are copied onto T, as the result of the Agree relationship that also drives movement of D to Spec-T.

(76)

```
TP[uD*,uv*]
   DP[1,sing,pl],l
        T
            AspP[uv*]
               VoiceP[uD*,uv*]
                  t_k
                        Voice k
                              t
                                    v
                                  j
             vP t_k v_j Voice
                    t_j t_i \sqrt_i v
```

T being a target for the insertion of subject agreement morphemes is a fairly standard assumption going back to [Halle & Marantz (1993); see also Embick (2010)] for a similar assumption about Latin subject agreement. Hierarchy of Projection-motivated Merge results in the following final
This completes the narrow syntax portion of the derivation, and I will now move on to the morphological part of the derivation, i.e. what occurs at MF.
This tree is very similar to that shown in (77). It differs in that it has been subject to an association rule associating an agreement morpheme, AgrSφT, with T. This associated morpheme bears a feature set corresponding to that of the grammatical subject of the sentence. This is a result of the probe-goal relationship established between T and the subject DP as a result of feature checking an uninterpretable D feature on T in the narrow syntax. Since T is a node marked for association of a dissociated agreement morpheme in Kham, a rule as follows applies:27

(79) Dissociated Subject Agreement Morpheme Insertion:
Tφ0 → [T [ T ] AgrSφ ]

This is a rule which is specific to Kham, coming from the part of the grammar corresponding to Morphology.

The DM literature that I am taking as background, including Embick (2010) and Halle & Marantz (1993), leaves linearization up to other protocols, i.e., it is not based on Kayne’s (1994) approach to linearization. The structure is linearized as follows:

(80) D ~ ((((((√go ~ V) ~ Voice) ~ Asp) ~ T) ~ AgrS ~ C)

Ultimately, the D head will have a /gi/ and an /n/ Vocabulary items inserted to it as a part of Vocabulary Insertion, as will the AgrS node. Asp will have a /ke/ Vocabulary Item. V, Voice, T, and C will all receive null phonological material, as a result of Vocabulary Insertion. The root √go will be associated with /ba/, however one wishes to approach the association of roots and their phonological material.

The symbol ~ is an operator representing immediate precedence of the left to the right.

After this an adjustment rule would need to be applied28 in order for the correct linear order to be achieved:

---

27Presumably, there could also be an object agreement morpheme somewhere lower in the complex head, given that the rule for object agreement should also apply blindly, however it would bear no features, given that there is no DP in the derivation which could enter into an Agree relation with the node that the object agreement rule applies to.

28This is fairly stipulative, but the other proposal for linearization in Bye & Svenonius (2011) requires mobile morphemes to have their affixation point stipulated as part of their Vocabulary Entry. This effect must necessarily be stipulated, particularly when one considers that it is not unheard of, crosslinguistically, for there to be nodes which can be realized by both prefixes and suffix. Kham, as noted in [1] is one of these languages.
(81) Flipping:
\[ T^0 \sim \text{AgrS} \rightarrow \text{AgrS} \sim (\ldots T^0 / \text{AgrS}[1,2]) \]

This rule applies only in the context where an AgrS node bearing 1 or 2 person features is in the
derivation. This rule is applied given that the AgrS node bears features which match the context
for the application of that rule. This rule reverses the linear ordering of the AgrS node and what it
is linearized next to; a suffix becomes a prefix. \(^{29}\) After the application of the aforementioned rule,
the syntactic structure is as follows:

(82) \[ D \sim ((\text{AgrS} \sim (((√go \sim v) \sim \text{Voice}) \sim \text{Asp}) \sim T)) \sim C) \]

The AgrS node now linearly precedes the linear structure containing the T head which triggered
the application of this rule.

I will assume for the purposes of this paper that the dual is a head which bears both singular
and plural features. One can refer back to the syntactic structure in (78) to see the feature sets of
the heads in this part of the derivation.

A partial Vocabulary pertinent to this derivation is as follows, assuming that we follow
Halle’s (1997)’s model of Fission, where features, such as, in this derivation, the person and number
agreement features on the D and AgrS heads involved, can continue to be discharged if other
Vocabulary Items could discharge those features:

(83) \(<\text{sing}> \leftrightarrow /n/ \]
\(<1,\text{pl}> \leftrightarrow /ge/ \]
\(<\text{pfv}> \leftrightarrow /ke/ \]

/\text{ge}/ is first inserted into the D head, as it matches those features, as shown in the tree as
well as the AgrS head, as it matches those features, as shown in the tree by a \(∅\) coindexed with
the D head. I assume here that <1,pl> corresponds with /\text{ge}/ and not /\text{qi}/ since the surface

\(^{29}\) Another way of accounting for these sorts of mismatches is to stipulate that phonological material is also marked
as to whether it is a suffix or a prefix; I do not assume this for the purposes of the paper. For the purposes of this paper,
this is not particularly important. Data for a non-lexically-determined prefixhood or suffixhood would be a language
where a phonologically identical agreement morpheme appears as a prefix in certain morphological contexts and a
suffix in other morphological contexts.
form of the plural, but not the dual, is in fact /ge/, when it wouldn’t be changed by any other phonological alternations. There is a similar phonological alternation between the second person plural morpheme (je-) and the second person dual morpheme(s) (ji-n-). I will give a representation of the D\(^0\) in this derivation after the insertion of /ge/, shown in (84).

\[
(84) \quad D_{[1,\text{sing,pl}]} \\
\quad \quad \quad /ge/ \\
\]

/n/ matches the singular feature on these heads, triggering Fission, which creates another head adjacent to the head subject to Fission, to which /n/ is inserted as it matches the features of that head. This results in the following structure, shown in (85)

\[
(85) \quad D_{[1,\text{pl}]} \\
\quad \quad /ge/ \quad D_{\text{sing}} \\
\quad \quad \quad /n/ \\
\]

From this we get:

\[
(86) \quad (\text{ge} \conc \text{n}) \sim (((\text{ge} \conc \text{n}) \conc (((\text{ba} \conc \emptyset) \conc \emptyset \conc \text{ke}) \conc \emptyset)) \conc \emptyset)
\]

There is a mismatch at this point between the phonological output so far and the actual data. I assume here that the dual is a result of a head bearing both singular and plural features. The phonological information corresponding to <1,pl> is associated with the features of a head bearing <1,pl,sg>. The singular feature Fissions off from the head, and is then subject to insertion on its own terms. The head created by this operation is then linearized with relation to the head which it Fissioned off of, as shown before.

In DM, such mismatches are accounted for by the application of contextually based readjustment rules, as mentioned beforehand in section 2.4.1. I propose a readjustment rule as shown in (87), which is in line with readjustment rules proposed in other works utilizing DM, to account for this mismatch.
Dual morpheme readjustment rule: /e/ → /i/ / _ʁ [sing]

This rule accounts for the phonological change of the second person plural morpheme in immediate precedence relationship with the morpheme /n/, which occurs only in the dual. Note that the second person plural morpheme is, in fact, /ge/.

This outputs:

(88) (giD nD) ̸→ (((giAgrS nAgrS) ̸→ (((ba√go ̸→ Ø) ̸→ Øvoice ̸→ keAsp) ̸→ ØT)) ̸→ ØC)

This concludes the derivation.

3 Introducing a Hierarchy of Projection based account

In this section, I propose a Hierarchy of Projection based account of the three types of nominalization laid out in section 2. Under this account, I propose that there is a n in the verbal extended projection in Kham. This can account for the variations in morphological complexity of the three types of nominalization examined in section 1. Under this account, the three types of nominalization are similar. The difference between the three are motivated, at least in part, by the amount of other functional material which appears in the derivation of each alongside the nominalization.

This section is structured as follows: In section 3.1, I give derivations for a type 1 and a type 2 nominalization, and we see the way in which Hierarchy of Projection feeding takes place. In section 3.2, I give a derivation for a type 3 nominalization.

Adger (2003) assumes that there is a Hierarchy of Projection. This is a device introduced in Starke (2001), continued in Starke (2004). It is generally assumed that some elements in the Hierarchy can be dropped. However, in Caha (2009), Caha (2010) some hierarchies of Projection, such as the one for case marking, which the paper treats in great detail, are proposed where no elements can be dropped. In the previous section, I have demonstrated the seeming optionality of much of the functional morphology of Kham. By this, I mean that one big difference between

30 However, see Starke (1995) for a formulation of the Hierarchy of Projection where all elements are mandatory.
the three types of nominalization in section 1 is the amount of functional structure beneath the nominalizer.

My core proposal in this thesis is that in Kham, the elements within the verbal Hierarchy of Projection are radically omittable, in that every element that is not the lowest in the Hierarchy’s sequence is able to be left out of a derivation. I will argue that a unified account of the nominalizations seen in section 1 is possible following from this, along with certain assumptions coming from the DM literature. It is generally assumed in [Starke (2001) and Adger (2003)] that there are multiple Hierarchies of Projection which correspond to different functional domains, including one for the verbal extended projection, which proceeds from \( v \) up to C, and another for the nominal extended projection, which proceeds from \( n \) up to D. \[^{31}\] These are always stipulated to some extent in most approaches, usually through feature checking or some other device. For instance, in a purely feature-checking based minimalist account of functional projection structure, one has basically introduced something very similar to the Hierarchy, but using a different mechanism.

To my knowledge, there has been little investigation into how these verbal and nominal Hierarchies interact. What I want to propose here is that the type of nominalizations attested in Kham provide insight into the question of whether or not separate Hierarchies might interact. My proposal here is that it is possible in certain circumstances for one Hierarchy of Projection to have elements of another Hierarchy of Projection within it, and that the type 3 nominalizations of Kham are an example of this happening. In certain circumstances, where a functional projection in a Hierarchy of Projection is also present in some other Hierarchy of Projection, the next head up in either Hierarchy is licit and can be an object involved in Hierarchy of Projection-motivated Merge. I call this “feeding”, and give a more formal formulation of this in (89).

(89)  **HIERARCHY OF PROJECTION FEEDING:**
An element contained in one Hierarchy can feed into another Hierarchy iff that element is in both hierarchies of Projection.

[^31]: Presumably, there is also a Hierarchy of Projection for the category \( a \), per [Embick (2010)]. In Kham, this would be used for the small class of native adjectives and the imported Nepali adjectives.
This, combined with the droppable nature of all but the lowest element in the Hierarchy of Projection in Kham will explain how the same nominalizing /o/ morpheme can function in the fairly different ways seen between Types 1, 2, and 3 nominalization.

At the end of section 2, we examined an initial derivation of a morphologically complex Kham sentence using an initial Hierarchy of Projection. I propose the two following Hierarchies of Projection for Kham, shown in (90), which are similar to those used for English in Adger (2003). These differ in the following ways. Firstly, they omit the lexical category V and N which are present in Adger (2003)’s Hierarchies, due to the assumptions of DM with regard to lexical categories. Secondly, there’s a lack of a possessive projection in the n Hierarchy, as this thesis does not deal with the specifics of possession in Kham, and as such I do not feel that I should make a proposal about those specifics in this thesis. Most importantly, there is a n in the verbal Hierarchy of Projection.

(90)  a. C > n > T > Asp > Voice > v

Extended projection of v

b. D > n

Extended projection of n

Despite overall parallels, my proposal in (90-a) is different from the Hierarchy proposed in Adger (2003) in several ways. The presence of the Voice head, from Sailor & Ahn (2010), which is partially based on but not the same as Kratzer’s Voice head, is where I introduce the external argument of a derivation, as opposed to being merged in specifier position of v. The Asp head corresponds to aspect, which seems to be separate from tense in this language. Evidence for this comes from the fact that future tense morphology occupies a different morphological position than aspect morphology.

Hierarchies of Projection have certain constraints, per Starke (2001), Adger (2003). There cannot be any non-Hierarchical material, for instance, the projection of a root, or a projection of an element not in that Hierarchy, that comes between one projection of the Hierarchy and another. For instance, referring back to the Hierarchy of Projection for the verbal functional sequence given in section 2.5 a hypothetical head which c-selects a T head could not then be immediately dominated
by a C projection, even though T would still be below C in that Hierarchy. In addition, when a Hierarchy reaches the last projection in its sequence one option is for, the tree being built to be merged into some other part of the derivation. This would be the case for a DP, which, after having a D Merged through the Hierarchy of Projection, would then be a syntactic object which could be Merged as an internal or external argument to a verb. Alternatively, if all features in the derivation are checked and the Enumerated elements in the derivation are exhausted, the derivation will terminate.

There is an additional proposal I will make. This is to allow a given Hierarchy to cease being the Hierarchy motivating Merge, with the grammar switching to a different Hierarchy of Projection to continue the motivation of Merge. This would happen iff an element contained in one Hierarchy is also contained in another Hierarchy. It is a mechanism which allows the grammar to cease using one Hierarchy of Projection to motivate Merge, and switch to another. In Adger (2003), there is no such device. It is implicitly assumed that a Hierarchy of Projection will always motivate Merge of all non-optional elements that it contains; in other words, that a Hierarchy would never end early. Starke (2001) does not propose a formal device such as this, but also does not rule out that a Hierarchy can end early. I will formulate this as follows:

(91) **TERMINATION**
   A Hierarchy of Projection is TERMINATED in either of the following cases:
   A. The highest node in the Hierarchy is in the derivation as a result of Hierarchy of Projection-motivated Merge.
   B. There is some interposing functional projection that is not in the Hierarchy of Projection which currently motivates Merge.

I will also presume that there is a requirement that a Hierarchy of Projection be dominated by a phase head for it to terminate; i.e. that iff condition B is met there is some phase head that is in the Hierarchy of Projection derived object immediately dominated by that interposing projection. The Hierarchy of Projection also presumably respects phase boundaries in the same way which other operations in the grammar do, in that Spelled-out parts of the derivation should not be visible to the Hierarchy.
3.1 Derivation of type 1 and type 2 nominalizations

3.1.1 Type 1 nominalizations

There are (at least) two predictions borne out by these assumptions with regard to the nature of the type 1 nominalizations in Kham. To explicate these, it will be useful to go through a sample derivation. Consider (1-b) from section 1, reproduced in (92). This is an example of a typical type 1 nominalization modifying a nominal, here, the word *mi:* ‘person’.

(92) no gyō:h-o mi:
that big-NML person
‘that big person’ [Watters (2002)]

My proposals of Feeding and Termination here, combined with the general DM and minimalist framework laid out in section 2, allow for (92) to be derived as follows. We will see that this process involves the presence of the $n$ node in the verbal Hierarchy, which, combined with my notion of Feeding, will allow a switch to the nominal Hierarchy of Projection once the $vP$ is built, resulting in the derivation ultimately terminating with the nominal Hierarchy of Projection’s highest element, namely, a DP, rather than the verbal Hierarchy of Projection’s highest element, which would have been a CP. I will go through this derivation step-by-step. $n$ is Merged with a root ($\sqrt{\text{person}}$) that it categorizes, as established in the theoretical outline for the DM laid out in section 2 above; this is the start of one Hierarchy of Projection. This $n$ categorizes a root in the exact same way in which the initial Merge of a $v$ to a root categorizes that root as a verb, as shown in the derivation shown in section 2.5 above. This is shown in (93).

(93) $nP$

\[ n \quad \sqrt{\text{person}} \]

One thing that remains unclear is if the initial Merge of a root with its categorizing head is motivated by the Hierarchy of Projections, or by feature checking, or by some other independent constrain which requires roots to be categorized. I will note here that there is head movement of $\sqrt{}$ to $n$, similarly to what was noted in the derivation of (71) in section 2.5. I will assume here for
concreteness that this is the result of Hierarchy of Projection-motivated Merge, and not as a result of feature checking, with Merger being motivated for independent principles which require roots to be categorized in a very local relationship to a categorizing head.\footnote{This could suggest that this is the result of feature checking, and not through the Hierarchy of Projection. There could be movement to specifier position of \( n \) of \( \sqrt{\text{person}} \), which is then followed by an application of Merger, as seen in previous derivations. Either is a possibility, however, neither account seems to make a particular difference in this derivation.}

The \( n\text{P} \) created then merges with a root corresponding with \( \text{big} \) to satisfy that root’s c-selectional features; the Hierarchy of Projection established by the Merge of \( n \) then terminates, as there is an interposing projection that is not in the Hierarchy, in this case, the \( \sqrt{\text{person}}\text{P} \). This termination is licit under the conditions established for termination beforehand, as \( n \) is a phase head. Since \( \sqrt{\text{person}} \) was the head which checked its features through Merge, it projects over \( n \). Since no strong features remain on \( \sqrt{\text{person}} \) to be checked, it is a maximal projection. This gives the following output:

\[
(94) \quad \sqrt{\text{P}[\text{\emph{un}]}}
\]

\[
\sqrt{\text{big}} \quad n\text{P}
\]

\[
\quad \text{n} \quad \sqrt{\text{person}}
\]

That root is then merged with a functional head \( v \), for categorizing reasons, which I have represented here as an uninterpretable root feature, and a feature on that \( v \) motivates head movement of the root and Merger into the little \( v \) head.\footnote{Alternatively, Merger could just apply without movement as the conditions for it to do so are met. It does not seem important to specify one way or the other here.}

The Hierarchy of Projection containing \( n \), which is below the \( v \) projection, terminates; another Hierarchy of Projection, here the one which starts with \( v \) is established. The \( v \) is Merged as a result of the Hierarchy as well as the requirement for roots to be categorized.
The Hierarchy of Projection can then motivate Merge of \( n \), as \( n \) is in the enumeration and is higher than \( v \) in the verbal Hierarchy of Projection. In this case, VOlice, Asp, and T are skipped over, since they are not in the Enumeration. This \( n \) bears a strong uninterpretable \( v \) feature, so \( v \) head-moves to \( n \), in the two step process of head-movement which has been established. The \( n \) here is also a part of the Hierarchy of Projection of \( v \), as outlined above. Since \( n \) has all strong features on it checked, as well as being motivated by the Hierarchy of Projection for its Merge, it projects.

At this point, as a result of Feeding as proposed in (89) above, the Hierarchy of Projection for the extended projection of \( v \) Feeds the Hierarchy of Projection for the extended projection of \( n \). In other words, since the \( n \) in the verbal Hierarchy of Projection is also an element within the nominal Hierarchy of Projection, Feeding allows the derivation to switch to the nominal Hierarchy of Projection’s \( n \). Because D is an element above \( n \) in the nominal Hierarchy, D is now Merged into the derivation. D does not c-select for \( n \), so head-movement of \( n \) to D does not occur. Since
the Merger of D to the pre-existing syntactic object was motivated by the Hierarchy of Projection, D projects; since D has no unchecked strong features, this is considered a maximal projection.

(97)

The derivation at the end of syntax is as follows:

(98)

We will now move on to morphological operations and Vocabulary Insertion. The spell out of these elements would actually have happened in a piecemeal fashion over the derivation, as a result of our phase-based approach to syntactic derivation. For expository reasons, I will treat this in one fell swoop. Since there is no part of this derivation where a rule could result in long-distance alternations in morphology, as argued against in Embick (2010), this should result in less confusion for the reader.
There is no head in the derivation which an agreement rule can apply to, so we do not get agreement marking on the verb. The structure thus linearizes as follows:

\[(99) \quad D_{\text{def}} \sim (((\sqrt{\text{big}} \sim v) \sim n) \sim (n \sim \sqrt{\text{person}}))\]

Ultimately, the D head will be associated with a /no/ Vocabulary Item corresponding to the [def] feature it bears. The \(n\) will be associated with either /o/ or Ø, depending on the context of the head. The following Vocabulary items are inserted at this point, and roots undergo any phonological process required:

\[(100) \quad \text{PARTIAL VOCABULARY} \]

\[
\begin{align*}
<n> & \leftrightarrow \emptyset / - \sim \sqrt{\_} \\
<n> & \leftrightarrow /o/ \\
<\text{[def]}> & \leftrightarrow /\text{no}/ \\
\end{align*}
\]

This Vocabulary is partial in that it includes Vocabulary Items corresponding only with morphemes which appear in this derivation—a complete Vocabulary of Kham is omitted for complexity reasons first and foremost, as well as space. Section 3.2 contains a more complete Vocabulary. Furthermore, I will assume that there is some other mechanism which associates phonological material with roots which occurs immediately preceding Vocabulary Insertion. This results in in the following output:

\[(101) \quad \text{no gyo:h-o mi:} \]

This analysis has several benefits. First, it explains why there is no subject agreement on these, or any, type 1 nominalizations. This is because the head in the functional sequence that hosts subject agreement morphology, which I assume to be T, is not present in the derivation, so the rule that would associate a dissociated subject agreement morpheme does not have a chance to apply. If it did, we would expect (102), in which the type 1 nominalization of /gyo:h/, ‘big’, is ungrammatically shown taking 3sg subject agreement.
(102) *no o-gyo:h-o mi:
  *that 3S-big-NML person
  *‘That big person’/The person that is big

Such an example does not appear with this meaning in all of Watters’ work. The reason that T does not appear in the derivation under consideration is because it is not in the enumerated elements for this derivation. If a T were to enter the derivation, in the case of a type 1 nominalization, the derivation would not converge as T would be unable to check its uninterpretable D feature, causing the derivation to crash.

There are several reasons that I propose that n is merged above a v shell in type 1 nominalizations in Kham, as opposed to immediately categorizing a root. This has to do primarily with the fact that the nominalizing morpheme -o does not exhibit root sensitivity, i.e., there are not multiple n heads which are phonologically different where the form is determined by the root. This suggests per Embick (2010) that is is merged above some other categorizing head.

The second reason has to do with one way that antonymic adjectival pairs are expressed in Kham. For some adjectival verbs, such as gyo:h, ‘big’; ca, ‘good’; or dā, ‘straight’; it is possible to express an antonymic meaning through the prefixation of ma-, the same negation marker which marks negation on regular, fully inflected verbs. The fact that the verbal negation morpheme can appear in these cases seems to suggest that there is verbal functional material in these nominalizations. The ma- negational morpheme cannot appear on nouns. There are some interactions between aspect and tense, and negation which seem to suggest that ma- is relatively high in the Hierarchy of Projection, at least above the Asp head. The stativity of nominalized clauses is not affected by this negation, however, which suggests that n is above Neg, and probably above T in the verbal Hierarchy.

---

34For an example in English from Embick (2010), compare the distributions of the morphemes -al, -iage, and -ion. All of these vary in phonological form based on the context of the root, and are all considered n heads. In contrast, the gerund morpheme -ing, also considered an n head, which merges above an v head and as such does not exhibit root sensitivity.

35This is noted by Watters to be one of the most ‘adjectival’ of adjectival verbs.

36However, not all adjectival verbs can be negated in this manner, for example, red cannot be negated to get the meaning “not red”. One could expect this to mark a split in this class of verbs, where those that can be negated are somehow more verbal than those that can’t, but given that ‘good’; ca cannot appear with perfective marking (become good), but ‘red’; gyalh can, as in sî-r@g gyalh-kâ-r@ ‘The trees have turned red.’ Watters (2002)”
3.1.2 Type 2 nominalizations

The structural difference between type 1 nominalizations and type 2 nominalizations is derived from the optionality of elements within the Hierarchy of Projection, where type 2 nominalizations lack a T head, resulting in the lack of agreement morphology, since the T head is the host of subject agreement morphology. Non-type 2 nominalizations, which do have agreement for subject and object, presumably have a fuller structure than do type 2 nominalizations. The Hierarchy of Projection for the DP is then modified as followed:

(103) **Hierarchy of Projection of DP**

\[ D > \text{Num} > \text{Rel} > n \]

Extended projection of \( n \)

Where Rel c-selects for a \( v \) head, which is visible in the same way, and for the same reasons, that lower functional projections which have been subject to head movement are still visible to the derivation, as shown in 2.5. However, there is something which must be ironed out here. type 2 nominalizations are also nominalized in the same way that adjectives are nominalized. Presumably, a type 2 nominalization should be able to fulfill the c-selectional requirements of a root like those in question. Thus, the structure:

(104)
Is predicted by this hypothesis. However, this can’t be the case, given previously noted restrictions on the ordering of type 2 nominalizations and type 1 nominalizations.

One possible solution for this is that the root can vary on what it selects; however, in a case where a root with an uninterpretable \( n \) feature is generated the problem still occurs. Another is to posit that this derivation would not converge given that \( pro \) is not bound in the derivation. This does not solve the problem. Firstly, given our assumptions that the \( n \) which corresponds with -\( o \) is a phase head, like all categorizing heads per Embick (2008), Embick (2010), then it stands to reason that this \( pro \) could never be bound. Even if \( n \) corresponding with -\( o \) came in different phasal “flavors”, we would then have to posit a similar alternation on \( v \) for it to be bound by something higher in the DP.

In addition, it’s also not clear what rules out \( n \), either the one above \( v \) or the one which is in the type 2 nominalization from binding \( pro \). If we say that D is what binds \( pro \), then we have to posit that all \( n \)’s in a DP have to alternate in phasehood together, to allow for D to bind the \( pro \). Most problematic is extending this account of type 2 nominalizations to non-type 2 nominalizations, as it’s not clear how \( pro \) guarantees object agreement within the type 2 nominalization. Further problematizing this account is that it predicts movement of the adjectival phrase to the Rel head, given that it bears \([u^v*]\), unlike the previous problems this can be fixed by proposing it bears \([uC^*]\) instead, which seems reasonable for something that licenses a type 2 nominalization in the DP.

Note that these problems are a result of the type 2 nominalization proposed, and not necessarily of the account of type 1 nominalizations in Kham. I propose a following account of type 2 nominalizations in Kham which will account for this. I will also posit that \( n \) can optionally bear a \([uD^*]\) feature.\(^{37}\) I also posit that An example sentence this proposal derives is as follows:

\[
(105) \quad \text{zihm } \text{jái-zya-o } \text{mi:}
\]

\text{house make-CONT-NML person}

\text{‘the person building the house’ [Watters (2002)]}

\(^{37}\)Per Sailor & Ahn (2010), it’s already assumed that a head can bear more than one feature. Notice that this is the same feature configuration that is exhibited by their \text{voice}.\]
In this example, *mi* is the head of the type 2 nominalization; the words before it are that type 2 nominalization. I will assume the functional Rel head from the previous analysis.

(106)

The derivation is as follows. The Hierarchy of Projection for the CP domain merges up to CP with head movement occurring in the same way we have seen before, and for the same reasons. *n* c-selects for a D, prompting phrasal movement of the subject to check the uninterpretable feature on *n*. When a C which c-selects for D is merged into the derivation, the DP moves again to check that uninterpretable feature on C. The Hierarchy of Projection terminates after C has been merged as there is no higher element in that Hierarchy.

This syntactic object is then merged with an *n* which c-selects for C. Then, the Rel head is merged, which c-selects for a *ν* feature. As the entire CP is on the edge of *n*, which is a phase head

---

38This C is presumably not a phase head. What a C is in Kham, if it ever receives overt phonological material, is a good question in and of itself. Many linking words, such as *if, for, because,* and *then* are expressed through a type 3 nominalization which occurs with a adpositional suffix on it. One good candidate is *hai*, which necessarily follows quotative speech.
as, all categorizing heads are under this framework, the \( nP \) is a licit target for movement; per Matushansky (2006) this results in phrasal movement due to intervening projections. A D is then merged, and the narrow syntax comes to an end.

Since I have decided to leave morphological case up to the morphological layer, I have assumed, as mentioned before, that the association of a dissociated case morpheme is based upon a DP being in a specific structural configuration, for ergative/nominative case marking this is the result of being dominated by and a sister of T while also c-commanding some other DP; this specification has not been met in this derivation so the dissociated case morpheme is not inserted.

The structure linearizes as follows:

\[
\begin{align*}
(\sqrt{\text{house}} \sim ((\sqrt{\text{build}} \sim v) \sim \text{Voice}) \sim \text{Asp}_{\text{cont}}) \sim n) & \sim (\text{Rel} \sim (((D \sim (\sqrt{\text{person}} \sim n)) \sim C) \sim n))
\end{align*}
\]

Given a partial Vocabulary:

\[
(108) \quad <n> \leftrightarrow o / \sim \text{Asp}^{40}
\quad <\text{cont}> \leftrightarrow \text{zya}
\]

We get the following output, after the Roots are processed and null phonological material is pruned:

\[
(109) \quad (\text{zihm} \sim (j\text{oi} \sim \text{zya} \sim o)) \sim \text{mi}:
\]

This also shows that although a fed Hierarchy of Projection sequence is possible, it does not necessarily have to be so; the Hierarchy can Terminate if the conditions for its Termination are met. It also seems to be the case here that externally headed type 2 nominalizations are not true nominalizations, but CPs with nominalizing syntactic information within them.

---

\(^{39}\)Barring unaccusative \( v \).

\(^{40}\)In fully tensed cases, the null phonological material is pruned out of the linear order per Embick (2010), as Vocabulary Insertion happens from the bottom up. When there is a phonologically realized T, there’s a different context which motivates a different nominalizer!
3.2 Derivation of a type 3 nominalization

Another instance of Hierarchy of Projection Feeding is exhibited by “high-level” nominalizations in Kham, such as in type 3 nominalizations. In these, most of the Hierarchy of Projection for the vP shell is in the derivation; including the nominalizer -o. As such, there are two ways that the derivation can precede: it can either precede on to be dominated by C, or it can feed into the DP Hierarchy of Projection[41]. Examples of the Hierarchy of Projection continuing on to C and not being embedded are “stand-alone” nominalizations, previously shown in the data section of this document. A derivation of one, such as:

(110)  mɔ-poh-na-o
       2SS-hit-1SO-NML
       You hit me [Watters (2009)]

Is as follows:

(111)

We will put aside the question of overt/covert pronouns and how they relate to agreement marking in Kham for now[42]. The derivation in (111) proceeds as follows. A DP headed by a D bearing first

[41] It could also terminate here. Presumably, this is also an option; possibly for certain types of complement constructions where the phrase acts as a complementizer but there is no overt C head.

[42] There’s a lot going on there.
person features $\phi$-features is merged with the root $\sqrt{hit}$, checking that root’s features. That root is then merged with a category-defining head $v$, the root head-moves to that category defining head as shown in previous derivations. The DP then moves to $v$ to check an uninterpretable feature on that head, the $\phi$-features of that DP are then copied onto $v$, much in the same way that they are for $T$ in previous derivations for reasons of verb agreement. This is a result of whatever results in head movement of the root to $v$. Alternatively, it could be the root itself which bears these $\phi$-features, and is the target of the object agreement dissociated morpheme association rule. I will assume here that it is $v$, but this analysis is not contingent on this assumption.

The verbal Hierarchy of Projection continues to motivate external Merge of the verbal Hierarchy, and head movement proceeds in the same way that we have seen in previous derivations, as a result of feature checking on each successive head. Voice introduces the external argument DP bearing second person $\phi$-features. The Hierarchy of Projection motivates external merge of $T$, the external argument DP moves to check its features after the head movement of the complex Asp head, as explained in previous derivations. $n$ is merged into the derivation per Hierarchy of Projection. $T$ head moves to $n$, checking its features. At this point, the derivation could precede in two ways; it can continue along the verbal Hierarchy of Projection, or it can feed into the nominal Hierarchy of Projection.

If the Hierarchy of Projection in question feeds into the nominal Hierarchy of Projection proceeding merge of $n$, this derivation will not converge, as there is nothing to motivate the merge of $C$ into the derivation; a TP or $nP$ alone is presumably not interpretable at LF. This does not rule out the possibility of type 3 nominalizations proceeding along the nominal Hierarchy, leading them to be dominated by a DP. In cases where type 3 nominalizations appear with overt case morphology, as shown in section [1.4], this is exactly what happens. If the derivation in question continues along the verbal Hierarchy of Projection proceeding merge of $n$, the derivation converges, as $C$ is merged into the derivation and the structure is interpretable at LF.

\footnote{Presumably, there’s some sort of requirement that once the enumeration is exhausted, there is some sort of final Spell-Out and linearization of all elements that haven’t been subject to it. If there is not, every derivation should crash, as there would be some part of the derivation that has not been sent to PF. As far as I can tell, this has never really been addressed in any detail in the literature. Interestingly, the Hierarchy of Projection based analysis could provide a
The structure at morphology is as follows:

(112)

The following two dissociated morpheme rules have applied:

(113)  
(a) Dissociated Subject Agreement Morpheme Insertion:  
\[ T^0_n \phi \rightarrow [T [T] AgrS \phi ] \]
(b) Object Agreement Morpheme Insertion:  
\[ v^0_{fin, \phi} \rightarrow [v [v] AgrO \phi ] \]

The structure is linearized as follows:

(114)  
\[ D_{[2]} \rightarrow ((D_{[1]}) (((((hit v) AgrO_{[1]}) Voice) Asp_{[pfv]} T) AgrS_{[2]} n)) \]

The Flipping rule applies, as in the derivation in section 2.5 reproduced here as follows:

(115)  
Flipping:  
\[ T^0 \rightarrow AgrS \rightarrow AgrS \rightarrow T^0 / AgrS_{[1,2]} \]

Given a partial Vocabulary as follows:

solution to this problem if we assume that there is some overarching rule that spells out a given Hierarchy of Projection whenever all features are checked in Hierarchy. How this would work alongside, or instead of phase theory would be the subject of another paper.
Vocabulary Insertion occurs as follows. The subject D head is realized as phonologically null as it does not bear the definiteness/prominence feature which pronouns in Kham can bear; the object D head is realized as phonologically null for the same reasons. In the complex n head Vocabulary Insertion occurs from the lowest part of the tree upwards. I will start off by noting that this is a fairly interesting challenge for our DM model; in that the Asp\[pfv\] head displays non-local outwards looking contextually based allomorphy. Given that n is not involved in the Spell-Out of the edge of v, it’s not immediately clear how this allomorphy is triggered.

Even if we assume some modified PIC where phase heads are also subject to Spell-Out or if (some) x heads aren’t phases, there’s another problem—there’s phonologically overt interposing material, which should block the contextual allomorphy of Asp\[pfv\]. Furthermore, we can’t even stipulate that there can’t be an Asp head here, for both theory-internal reasons, in that Hierarchy of Projection should be free; nor for empirical reasons, given that the continuous aspect freely occurs

---

44This might be desirable, in that it easily accounts for the shifting of subject agreement to the front of the verb.
in nominalizations. In addition, we can’t chalk this up to some sort of split in aspects, where the continuous and imperfective cluster as one sort of aspect and the perfective as another, with the perfective occuring above T and the imperfective below, because the nominalized form also never co-occurs with the imperfective. Furthermore, this is not phonologically conditioned allomorphy as in the non-nominalized declarative the third person singular subject agreement morpheme is -o, and can occur next to an overt Asp head.

The first problem turns out not to actually be a problem, when we fully consider the implications of our version of head movement in combination with our version of the PIC. I will reproduce the syntactic structure of the head in question, noted earlier as a result of the particular account of head movement assumed here, and becoming crucial now.

(117) $<n, T, \text{Asp, Voice, } v, \sqrt{\cdot}>$

Here, $n$ triggers Spell-Out of $v$, as $v$ is contained within some other strong phase, here $n$. This should be expected. However, as a result of the particularities of the structure above, $n$ is also within some other strong phase, here $v$. This means that $n$ is also itself subject to Spell-Out. This resolves the first, and most looming of the two problems mentioned before—how $n$ and Asp are in the same cycle for Spell-Out.

[Embick (2010)] suggests that instances of apparent non-local allomorphy are actually instances of the application of impoverishment rules. In this case, the following rule applies before linearization:
(118) **ASPECT IMPOVERISHMENT RULE**

\[ \text{pfv} \rightarrow \emptyset / \_ n \]

With this, Vocabulary Insertion is as follows:

(119) \( (\emptyset \sim \emptyset) \sim ((\text{Na} \sim (\text{poh} \sim \text{na})) \sim \_ o) \)

And the derivation is finished.

### 4 An alternative analysis involving nominalizer movement and reprojection

We have just established an analysis of three types of nominalization in Kham. However, there are startling differences in the structure of type 1 and type 2 nominalizations, despite their otherwise similarities. Furthermore, the analysis of type 2 nominalizations laid out in section 3 requires the addition of a functional projection which appears to be unmotivated other than to motivate phrasal movement of a constituent rather than the head of that constituent. In this section, I’ll lay out an account of type 1 and type 2 nominalizations which contrasts with that offered in the previous section. I will assume that the analysis of type 3 nominalizations in section 3 is on track, and that the Vocabulary Items, linearization protocols, other DM related rules are on track as well. This proposal provides a principled explanation of the differences in type 1 and type 2 nominalizations, while also better reflecting apparent similarities between the two.

In addition to that, this analysis also draws on a, to my knowledge, previously unexplored possibility for Hierarchy of Projection-motivated *internal* Merge, one which brings it in line with other types of motivation of Merge. The possibility that a Hierarchy of Projection could motivate internal Merge as well as external is never ruled out, but this does not appear to happen in any of the languages covered in [Adger (2003)](#). This type of motivation, along with the interaction with the mechanisms through which this account deals with the labeling of constituents created by Merge (i.e. that the element in the Hierarchy which is merged with another syntactic object through
Hierarchy-motivated Merge is the element which projects) neatly captures these similarities, as well as explaining the ability of these two types of nominalizations to freely switch between being modifiers of head nouns in a noun phrase, or to occur alone, as the head of a noun phrase.

The analysis which I have proposed in section 3 accounts for the facts laid out in section 1. It is the most obvious way of approaching an analysis of all three types of nominalization given the framework which has been laid out. All three involve cyclic head movement to derive the nominalization. Given that this is the core way which allows for word building within DM, such an approach should be expected. It is able to quite adequately capture the particularities of type 3 nominalization. However, there is reason to believe that the analysis of type 1 and type 2 nominalizations may not be on track. There are similarities between the two which that analysis does not capture, as it proposes that the two, despite their Here I am referring to the seeming fluidity between the two which allows certain verbs which can occur in type 1 nominalizations to also occur in type 2 nominalizations. In this account, type 1 and type 2 nominalizations are derived in a very similar way, with the difference between the two being solely in the amount of functional projections which occur beneath the nominalizing phrase. This account could account for the fluidity between the two types of nominalization, as well as the alternations noted between those two types of nominalization with regard to copula constructions.

4.1 Against a simple nP adjunction account

In Watters (2002), the linear ordering of restrictive modifiers of something roughly corresponding to a DP is as follows:

(120) **DEMONSTRATIVE-LOCATIVE NML-TYPE 2 NML-NOMINALIZATION-“ADJECTIVES”-NOUN**

One possible solution for the ordering of type 1 and type 2 nominalizations within the Kham noun phrase is that type 2 nominalizations are simply examples of adjunction, as are all of the other possible modifiers of a head noun—given that they are all formed through the process of nominalization. Under such an account, (121)
would have a syntactic structure shown in (122).

(122)

Under such an account, all nominalizations would simply adjoin to the lowest $nP$ of a given DP, i.e. the $nP$ containing the DP’s head N. In the cases examined above, where type 2 nominalizations occur without some other nominal they appear to modify, that nominalization’s $nP$ would be the phrase which eventually would be merged with a D, per the Hierarchy of Projection. I have glossed over the internal structure of the locative nominalization, *Nah-da-ŋao*, ‘before-ALLT-NML’. However, these sorts of nominalization also seem to be able to be the lowest $nP$ in a DP in the same way as type 2 nominalizations, as attested in Watters (2002). By this I mean that *yah-da-ŋao*, ‘before-ALLT-NML’ would be a grammatical DP, with a meaning, similar to type 2 nominalizations which do not precede a nominal, of ‘the one from before’.

There is reason to think that this can’t be the case. This is because the ordering of these elements is restricted, as shown in section [1]. In particular, type 2 nominalizations must precede type 1 nominalizations. This shows that there is a distinction between the those two types of nominalization on top of the evidence already given. The following example illustrates this restriction on ordering. In (123-a), the type 2 nominalization *hu-wo*, ‘come-NML’ precedes the type 1 nominalization *gyo:h-wo*, ‘big-NML’. In contrast, in (123-b) the ordering of the type 1 and type 2
nominalizations is reversed, and the example is ungrammatical.

(123) a. no ḥah-da-ŋao hū-wo gyo:h-wo mi:
that before-ALLLT-NML come-NML big-NML person
‘that earlier big person who came’ 

b. *no ḥah-da-ŋao gyo:h-wo hū-wo mi:
that before-ALLLT-NML big-NML come-NML person
‘that earlier big person who came.’

This is also a problem for our previous analysis of these sorts of nominalizations, which predicts that type 2 nominalizations should be able to be c-selected by the root of a type 2 nominalization, given that -o is a n head. There are similarities between type 1 and type 2 nominalizations. Both lack agreement morphology. Both, when they don’t co-occur with a noun (by noun, I mean a root that co-occurs only with a phonologically covert n), seem to be able to be the lowest nP of a DP. However, unlike type 1 nominalizations, type 2 nominalizations can occur with aspect morphology. Type 1 nominalizations furthermore must occur closer to the verb than type 2 nominalizations, and, as noted an earlier section, there is a distinction in the semantic interpretation of these two types of nominalization when they are the arguments of various copulas.\(^{45}\)

### 4.2 A hybrid adjunction account

One possible line of analysis that would not involve an adjunction structure for both type 1 and type 2 nominalizations would be as follows, where type 1 nominalizations have a structure exhibited in (124). Under this analysis, type 1 nominalizations would not, technically, be nominalizations at all. This is because a nominalization is something which involves at least some verbal functional material which is then dominated by a nP—there is no such verbal functional material in the structure in (124). Rather, they would be nouns, but would differ from other nominals in that their categorizing head would be the phonologically overt -o head which also functions as a nominalizer.

\(^{45}\)Although, an argument could be made that type 2 nominalizations are not licit in these argument positions, and these arguments are yet another sort of nominalization. However, what the distinction between this novel type of nominalization and type 2 nominalizations is unclear.
In contrast, type 2 nominalizations would have a structure as shown in (125).

(125)

```
  nP
   /\  \
  /   \  
 nAspP vP
   \   \ 
   v    v
   \   /  
   v  \  
   /   \  
  vP  Asp kAsp
  /  n
  /  /
 t_k t_k
  /  /
  v  v
```

On this view, in type 2 nominalizations, the root would move via head movement first to \( v \), then to \( Asp \), then to \( n \), in the same way that head movement in Kham occurs more generally, both as shown in the sample derivation of a Kham clause in section 2 as well as under the proposal in section 3. A tree like (125) which shows the complex head created by head movement is shown in (126).

(126)

```
  nP
   /\  
  /   \  
 nAspP vP
   \   \ 
   v    v
   \   /  
   v  \  
   /   \  
  vP  Asp kAsp
  /  n
  /  /
 t_k t_k
  /  /
  v  v
```

Unlike fully finite clauses, the subject DP (which would be considered the "head" under a relative clause analysis) doesn’t raise to \( T \), since there is no \( T \) head which enters the derivation. This accounts for the lack of subject agreement in these sorts of nominalizations. It could also account for the lack of (ergative) case marking in these examples, since ergative case marking
is a dissociated morpheme inserted at during the morphological part of a derivation as part of a structurally defined relationship involving a T head.

Type 1 nominalizations would then be adjuncts, as before. However, this account fails to predict the correct word order in the case of transitive clauses where the (in)direct object is overt (the order of intransitive clauses would either be a quirk of the linearization system, or correctly predicted by the LCA, depending on the assumed analysis of linearization). This is because there is nothing which prevents the root from c-selecting an internal argument. This predicts that type 2 nominalizations should be able to occur with both an internal subject and object, which is not the case.

The problem as it stands is as follows: Type 1 and type 2 nominalizations appear similar, but they are not the same. Type 2 nominalizations necessarily precede type 1 nominalizations. Furthermore, an unelaborated nP adjunction account must be ruled out, as this would predict that a type 1 nominalization could adjoin to the nP projection in type 2 relative clauses. Under an account where type 1 nominalizations adjoin to an nP, which would presumably be the case when they co-occur with an ordinary noun involving no nominalization or verbal morphology on it, they appear to the left of that nominal. If left adjunction is allowed in this way, such an analysis would predict that type 1 nominalizations could left adjoin to the nP projection of a type 2 nominalization, which should be ungrammatical.

4.3 Against an adjectival account

Another alternative which also should not be adopted involves would involve proposing that Kham does have an adjectival Hierarchy of Projection alongside its nominal and verbal Hierarchies. Under such an account, type 1 nominalizations would still involve the n head which corresponds to -o. There would also be an additional a head involved, which could appear in many places with regard to the nominalizing morpheme -o. (127) and (128) are two possibilities for the syntactic structure of type 1 nominalizations which this proposal would involve. Both involve the nominalizing morpheme -o, and a phonologically covert a head. They differ only in terms of which of these two
heads projects over the other.

(127)  
\[
\begin{array}{c}
  nP \\
  \downarrow \ \\
  aP \quad n \\
  \downarrow \ \\
  a \quad \sqrt{\} \ \\
  \downarrow \ \\
  \emptyset \\
\end{array}
\]

(128)  
\[
\begin{array}{c}
  aP \\
  \downarrow \ \\
  nP \quad a \\
  \downarrow \ \\
  \sqrt{\} \ \\
  \emptyset \\
\end{array}
\]

In addition, (129) could also be a possibility under this proposal. Under this structure, type 1 nominalizations have a structure like that proposed in section 3 but with an additional a head which projects over the nominalization.

(129)  
\[
\begin{array}{c}
  aP \\
  \downarrow \ \\
  nP \quad a \\
  \downarrow \ \\
  vP \quad n \quad \emptyset \\
  \downarrow \ \\
  \sqrt{\} \ \\
  \emptyset -o \\
\end{array}
\]

It could seem reasonable to propose that there is an adjectival Hierarchy in Kham, given that Watters (2002) states that there are some, but not many, adjectives in Kham. However, there is no reason that this is necessarily true. One reason which might motivate this proposal is that when ordinary, non-nominalized nouns modify another noun, the preceding noun receives genitive case marking.

(130)  
\[
\text{s\text{-}\text{n-e\text{-}kwa: wool-GEN cloth \text{\textquotesingle woolen cloth/clothing\textquotesingle}}}
\]

Watters (2002)
Under this account, it could be proposed that the “genitive” case marking here is actually a categorically distinct but homophonous morpheme -e which corresponds to the a head which this proposal would involve. There would then be some sort of readjustment rule accounting for the phonological covertness of this a head in the context of the nominalizing n head -o. Alternatively, the phonologically overt -e head could be a more contextually specific Vocabulary Item, which would also account for its phonological overtness here, which would contrast with that of type 1 nominalizations and the class of adjectives. What exactly this rule would look like would depend on what particular formulation of type 1 nominalizations would be adopted.

(130) and (131) would contrast with the set of pure adjectives, an example of which is given in (132).

(132)  
\[
\text{nikələni zi gehpə ñəhl}
\]

very EMP big sleep
‘Very deep slumber’ \text{Watters (2002)}

(132) is an example with a native adjective, and there’s no genitive case marking, as expected. This could be account for either through a contextually specific Vocabulary Item, or a readjustment rule.

However, it’s not clear that all nouns need genitive case marking to function in this way:

(133)  
\[
mūrjyar jwith bəṇoi dərbilo
\]
certain.type.of.durable.wood stick very stout
‘A very strong hickory? stick’ \text{Watters (2002), Watters (2004)}

In (133), mūrjyar, ‘hickory?’ should be marked with genitive case. This is because in \text{Watters (2004)} classifies that word as a noun, and not as an adjective. dərbilo is also classified in that text as a Nepali loan adjective. \text{Watters (2002)} states that when adjectives follow the nominal that they modify rather than precede it, it is a case of apposition. This is because in cases such as those, both the nominal in question, as well as the adjective in question appear with matching number.
marking. Whether this is actually the case in this particular example is unclear, since this example is not in the dual or plural, which means that there is no overt number morpheme.

This is also a problem for an account involving an a Hierarchy. There is simply not enough data regarding the closed class of adjectives to make a principled proposal to account for them. As such, there’s no good way to determine which, if any, of the structures proposed at the beginning of the section is the correct analysis of type 1 nominalizations, and which is not.

Evidence for the third of the possible structures of type 1 nominalizations under such an analysis, in which there is a classifying v head, could come from the fact that type one nominalizations take the same sort of intensifying adverbs as verbs. Thus, we see in (134) the intensifier bənəi modifying

(134)  bənəi gyahm-o  
very red-NML
‘very red’

(135)  jən gyahm-o  
even.more red-NML
‘even more red’

(136)  bənəi dō:h-ke-ra  
very run-PFV-3SS
‘they really ran’

(137)  jən dō:h-ke-ra  
even.more run-PFV-3SS
‘they ran even more’ Watters (2002)

But, this is not strong evidence, since there are words in many languages which can modify adjectives as well as verbs, such as English ‘really’.

In addition, there’s also strong evidence which suggests that there may not be an adjectival projection in Kham at all, even in the case of the closed class of adjectives.

(138)  ya-gehppa-e kōi zə ma-ra-jai-wo  
3p-big-ERG what EMP NEG-3p-make-3S:IMPFV
‘Their leader did nothing to them.’ Watters (2002)
The fact that *gehppa*, one of the words which Watters classifies as a native adjective in Kham, is grammatical when it doesn’t modify some other noun, suggests that there may not be an adjectival projection. Note here that it’s both possessed and occurring with ergative case marking—it’s quite clearly acting like a noun. Note also that when this is possessed, there’s no change in meaning to “their bigness”, which could be expected if this was some sort of phonologically null categorizing *n* which then appeared above the adjectival projection under discussion.

### 4.4 A unified account of type 1 and type 2 nominalizations involving different adjunction points and nominalizer movement and reprojection

The following proposal makes use of several theoretical devices that were elaborated on the previous proposal for the syntactic structure of type 1 and type 2 nominalizations. However, these devices are not necessitated by that proposal, but come about as a result of the framework used in this thesis more generally. The most important of these is the fact that c-selection, at least in Kham, mostly seems to target the lowest element in a given hierarchy of projections. The second is closely related to this, which is that when an element undergoes Merger as a result of head movement, that element’s features are still visible to the derivation. The third comes from Adger (2003), which is the proposal that when c-selection motivates merge, the element whose feature is being checked as a result of that merge is the element which projects. This proposal can account for both the ordering of type 2 and type 1 nominalizations with regard to each other, as well as with regard to canonical nominals.

To begin with, I propose that for the structure of a simple DP, there is minimally a nominal Hierarchy of Projection for the nominal projection containing an *n*, Num, and D projection, as also assumed in section 3, as shown in (139).

\[(139) \quad \text{HIERARCHY OF PROJECTION of DP:} \]

\[
\text{D} > \text{Num} > n
\]
All simple DPs result in head movement of \( n \) to Num to D, where Num corresponds to number suffixes and morphological case is located at D when the entire DP is in a structural configuration in which it would be the target of a rule associating an overt case morpheme.

Under this proposal, the derivation of a type 1 nominalization procedes as follows: A root c-selects for an argument, but rather than c-selecting for a D, as was assumed to happen, that root c-selects for an \( n \). This is the same as in the proposed derivation of type 1 nominalizations brought up in section 3. However, I also propose that this is not unusual and that all argument selection in Kham is done in the same way, even outside of type 1 nominalizations. In this way, c-selection of a direct object is motivated by a root bearing an uninterpretable \( n \) feature, much as head movement in the verbal spine is motivated by a strong uninterpretable \( v \) feature. The \( n \) feature/projection of a DP is visible to the derivation for the same reasons that the \( v \) feature/projection of a complex head involving the verbal Hierarchy of Projection is, as discussed in sections 2 and 3. In the derivation of a type 1 nominalization, however, rather than a full DP being merged as the complement of the root, here the nominalizing morpheme -\( o \) does so instead, resulting in the structure in (141).

(140)  
```
      DP
     /   
  D   NumP
    /   
  nP  Num
   /   
  n
```

Here, the root projects over \( n \), rather than the other way around, because of the previously described way of determining which of the two targets of Merge projects.

Next, a little \( v \) head is merged, categorizing the root, and beginning the verbal Hierarchy of Projection. Since it is the root which projected over \( n \), and not vice versa, the nominal Hierarchy of Projection cannot motivate Merge of nominal elements from the enumeration. Head movement of the root to \( v \) then also occurs, which results in (142).
In the case of necessarily intransitive unaccusative verbs, which there is some reason to believe the roots involved in type 1 nominalizations are a part of, there is presumably some alternation on the categorizing head $v$ which classifies them as such. This alternation has been commonly accepted since its initial proposal for English unaccusatives and passives in Chomsky (1995). Unaccusative $v$ doesn't Agree with the complement of the root, because it does not bear uninterpretable features corresponding to the set of features in the D domain which show up as agreement morphology on the verb. If this $v$ did bear these uninterpretable features, this would predict that unaccusative verbs would surface with object agreement morphology.

Going by Embick (2010), we will assume that all categorizing heads—i.e. $n$, $v$, and so on—are phase heads. As a result of this, when another phase head is merged onto this structure, the derivation will not converge due to the unchecked $v$ feature on $n$. Presumably, in this case, Last Resort-motivated movement is applicable, resulting in the structure in (143). In (143), we see here something which has not yet come up in previously seen derivations. When $n$ moves to $v$, it is in a position in which it can check its uninterpretable $v$ feature.

\[
\text{(143)}
\]

I have left the label of this new constituent out of the derivation. As with any instantiation of Merge, which movement is presumably one of, either of the constituents could project. In this case, since it is $n$ which is checking features, going by Adger (2003), it should be $n$ which projects, and not $v$. This results in the following structure exhibited in (144).
Merger then applies, resulting in (145), where the complex $v^0$ has moved to $n^0$.

I have put a t in the position where the complex $v^0$ head was before Merger. This is because I do not wish to make a claim one way or another as to whether or not Merger, when it applies in situations such as these, creates an additional link in a chain or not. The Merge of $n$ to $v$ does leave a trace. Whether or not Merger, which is a Morphological operation available at all levels of the derivation, also results in a new link in a movement chain being created is unclear. If it does, then a trace of $v$ is left in the position where the t in (145) is.

Presumably, the reason that $n$, in derivations such as these, can undergo both long-distance movement as well as Merger has to do with the fact that the $n$ in question is both a maximal projection and a minimal projection, which is licit per Matushansky (2006). This results in a structure where two phase heads which have undergone Merger to each other. As noted before, this should result in mutual Spell-Out of those phase heads and their domains.

This account is more desirable than the previous one for a number of reasons. It accounts for why type 1 nominalizations can act alternate between lending adjectival meaning and functioning as the core of a DP. Furthermore, it also captures the verbal nature of these sorts of nominalizations—many roots which participate in type 1 nominalizations are also grammatical
in cases where they would occur with more inflectional morphology, as the verb of a matrix clause, for instance. Importantly, it also prevents type 2 nominalizations from being embedded type 1 nominalizations. Presumably, in type 2 nominalizations, since they can occur with aspect morphology, the \( n \) will have already checked its uninterpretable features, which would mean that the movement shown in the previous derivations wouldn’t be motivated. A DP is blocked from being Merged as a complement in the root in these cases because it can’t receive structural Case.

Type 2 nominalizations are, as noted before, similar to type 1 nominalizations in a number of ways: they occur with -\( o \), and they don’t appear with agreement morphology. In the case of type 2 nominalizations, such as:

(146) zihm j\( \bar{a} \)-zya-o mi:
    house make-CONT-NML person
    ‘the person building the house’ [Watters (2002)]

It seems likely that there is a variation on little \( v \) which may be based on finiteness, similar to that between unergative/unaccusative \( v \) noted in the previous proposal, which should account for the lack of object agreement The analysis here is not contingent on these flavors of \( v \); these are independently needed to account for the lack of object agreement morphology in non-finite and unaccusative verbs in non-nominalized verb forms. There is another similarity between type 1 and type 2 nominalizations, which is that both can appear without modifying something.

I propose that in these situations, what happens is essentially the same as what happens in type 1 nominalizations, where the nominalizer -\( o \) is merged in an argument position. The difference between type 1 nominalizations comes from how much of the verbal Hierarchy of Projection is merged into the structure. For instance, an alternation of (146):

(147) zihm j\( \bar{a} \)-zya-o
    house make-CONT-NML
    ‘the one building the house’

has a derivation as follows:
I will here assume that there’s a similar finite/non-finite alternation in T heads in Kham, the T in the derivation in question is non-finite. There are several interesting things to note here, which differ from the type 1 nominalization examined earlier. Note that the $n$ has already checked its uninterpretable $v$ feature, as it was Merged into the derivation in order to satisfy the uninterpretable $n$ feature on the Voice head, and in doing so, was in a position to check its uninterpretable $v$ feature. Interestingly, Merger cannot have applied in this particular situation. Had there been an application of Merger targeting $n$ and the complex Voice head following the Merge of the two, the derivation would ultimately not converge. This is because the later Merge of T would either violate the Hierarchy of Projection when it and the complex $n$ head previously outputted are targeted by Merger, or because T would be an enumerated element which is in the enumeration but was never a target of Merge.

Here, like in type 1 nominalizations, the nominalizer -$o$ is merged to T. Unlike in the case of the type 1 nominalizations, it seems that T should project. This is because it is only T which checks a feature, as shown in (149).
(149) differs from type 1 nominalizations in that \( n \) does not move to check its feature. One reason that would motivate \( n \) projecting over \( T \) would be that this merge is motivated by the Hierarchy of Projection, and not as a result of feature checking. Under this account, the Hierarchy of Projection can motivate internal as well as external Merge, in the same way that feature checking does. Alternatively, the reason for \( n \) projecting could solely be a result of the way in which the Hierarchy of Projection for the verbal extended projection Merger also applies here, resulting in the following:
A question that this analysis of type 2 nominalizations raises is what would happen if a \( n \) were merged as the complement of a root, and a Voice head were introduced into the derivation, introducing an external argument. This should be generable by the grammar. Another question which this analysis raises is why there is no subject agreement morphology in (150). The following data goes a long way to answering both of these questions.

(151) a. \( tē:kya-e \ o-\jai\-wo \ zihm \)
shorty-\text{ERG} 3\text{SS}-\text{make-\text{NML}} \text{house}
‘the house built by Shorty’ \cite{Watters2002}

b. \( ao \ sōi\-si\-u \ zō \)
this kill-\text{DETRANS-\text{NML \text{EMP}}}
‘This has been killed’/‘This is a killed one’ \cite{Watters2002}

(151) are examples of exactly this happening. In these (151-a), \( -o \) is merged as complement to the root. A Voice head is merged into the derivation, which introduces the agent (\( tē:kya \)). Given that there is both morphological case on that agent, as well as the fact that T is the locus of subject agreement, that agent moves to spec-T. \( n \) then moves up to T—motivated by both Last Resort and/or by the Hierarchy of Projection, and then projects over it, as it does in previously examined nominalizations The reason that there is no ergative case marking when \( n \) is merged to check T’s
features is a result of Merger applying before Spell-Out happens. Morphological case nodes are inserted to the tree only at Spell-Out, and are not present in the derivation in the narrow syntax. Since Merger applies before Spell-Out, $n$ would no longer be in a position have a dissociated case morpheme associated with it in Morphology. The nominalizations in (151) structurally would resemble type 1 nominalizations in that they would both have the nominalizing morpheme -o Merged initially to fulfil c-selectional requirements of the root.

The reason that no agreement morphology occurs is a result of $n$ bearing no $\phi$-features which correspond to the feature sets of any agreement morphemes in the Vocabulary. In other words, since it is not a full DP, it bears neither person or number features, which I take to be located in the D and Num functional heads. In cases where a subject with those features enters the derivation, subject agreement morphology occurs. The lack of object agreement morphology seems to be based on a more general lack of object agreement morphology in non-finite cases. This also goes a ways towards capturing the differences in the meaning between the way that type 1 and type 2 copulas interact with copulas—these differences could be related to the differences in the amount of functional projections between type 1 and type 2 nominalizations.

One question still remains: what determines the ordering of type 1 and type 2 nominalizations with respect to each other. As established before, when these modifiers appear with out something that they modify, they function as nominals. This is a result of them projecting a full DP structure, in the same way that anything else categorized by a head does. When this happens, they seem to act in much the same way. However, otherwise, type 2 nominalizations precede type 1 nominalizations. There is a similar phenomenon in English, where one noticeable difference seems to trigger an alternation in the grammaticality of two relative clauses. This is also an alternation in finiteness, where non-finite relative clauses must occur closer to the N they modify than finite relative clauses.

(152) a. The store [to buy cheap kitchen supplies at] [that’s in Chinatown].

b. *The store [that’s in Chinatown] [to buy cheap kitchen supplies at].
(153)  a. N [nonfinite] [finite] English
       b. [finite] [nonfinite] N Kham
       c. *N [finite] [nonfinite] English
       d. *[nonfinite] [finite] N Kham

One way of accounting for this in Kham is to the following: Type 2 nominalizations are merged as adjuncts to the core nP. Type 1 nominalizations are adjoined to NumP. The core nP moves head-to-head to D, to get number and case marking. There appears to be a constraint on the closeness of finite and non-finite clauses in terms of their closeness to an N which they modify, both in English and in Kham, where finite clauses must be further away from that nominal in comparison to non-finite clauses. While more work needs to be done in this

The previously established account of clausal nominalizations still stands. In those cases, the Merge of n is motivated by the Hierarchy of Projection, rather than taking the position of an argument. In cases where these nominalizations occur in an embedded context, they follow the DP Hierarchy. In cases where these nominalizations stand on their own, they follow the CP Hierarchy. This proposal has a number of benefits over the first proposal. It provides a unified account of type 1 and type 2 nominalizations. It also explains why these nominalizations can switch freely between functioning as the core of a DP and modifying a nominal. In addition, alternations in tense and aspect between the two could explain the ordering restrictions of these clauses, whereas the analysis in section [3] has no way of explaining these ordering restrictions.

5 Conclusion

In this paper, I have outlined my theory of Hierarchy of Projection feeding, as well as adapting Matushansky (2006)’s account of head movement into a phase based syntactic outline, as well as unifying that account of head movement with a fairly standard model of DM. I have then used these two to give a unified account of three sorts of nominalization which occur at very different levels in Kham, arguing that despite variations in their distribution as well as differences in the
amount of morphological material which is grammatical with these sorts of nominalizations, it is in fact the same morpheme. The difference in distribution and meaning among these three sorts of nominalization come from more or less of the Hierarchy of Projection being present in the derivation.

This should extend to other types of nominalization in Kham. The Hierarchy of Projection model introduced here may also account for the difference in function of two types of copula in Kham, which differ from other verbs in a number of ways. This difference in function of these sorts of copula with type 1 and type 2 nominalization would be a result of different amounts of functional material in the type 1 and type 2 nominalization. In short, the copula hosts more functional material when there is less functional material in its complement, such as in the type 1 nominalization, and less when there is more functional material in its complement, such as in a type 2 nominalization. Similarly, an account using this approach could explain the differences in meaning between the two types of nominalization with regard to certain auxiliary verbs, as shown in section [1.1]. An account of the interactions between these auxiliary verbs and type 1 and type 2 nominalizations would be the next step in achieving a full understanding nominalization in Kham, and would most likely have interesting ramifications for the syntax of Tibeto-Burman languages more generally.

In addition, this paper brings up interesting questions about the interaction between these Hierarchies, which are stipulated in various ways in most minimalist investigations, either through feature checking or through some other method. For instance, there is a theoretical possibility that two Hierarchies could recursively feed each other, possible evidence of this comes from the recursively nominalized structure of certain locative adpositional constructions in Kham, which can recursively be nominalized and then receive further adpositional marking post-nominalization. The interleaving of nominal functional projections and verbal functional projections also raises interesting cross-linguistic questions. One avenue for further research would be to see if such an approach to analysis is applicable to a more familiar language, and, if so, if the predictions made by this proposal are in line with that language. This interleaving also brings up interesting
questions about the role which the Hierarchy of Projection for various functional domains plays in explaining differences between languages, as the formulation of this in Starke (2001) assumes that these Hierarchies are constant cross-linguistically.
References


Linguistics of the Tibeto-Burman Area, 16(2), 89–112.


# A Morpheme Gloss Abbreviations

<table>
<thead>
<tr>
<th>Num</th>
<th>Abbr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1S</td>
<td>1S</td>
<td>first singular (subject, object, or possessive)</td>
</tr>
<tr>
<td>1SS</td>
<td>1S</td>
<td>first singular subject</td>
</tr>
<tr>
<td>1SO</td>
<td>1S</td>
<td>first singular object</td>
</tr>
<tr>
<td>1D</td>
<td>1D</td>
<td>first dual (subject, object, or possessive)</td>
</tr>
<tr>
<td>1DS</td>
<td>1D</td>
<td>first dual subject</td>
</tr>
<tr>
<td>1DO</td>
<td>1D</td>
<td>first dual object</td>
</tr>
<tr>
<td>1P</td>
<td>1P</td>
<td>first plural (subject, object, or possessive)</td>
</tr>
<tr>
<td>1PS</td>
<td>1P</td>
<td>first plural subject</td>
</tr>
<tr>
<td>1PO</td>
<td>1P</td>
<td>first plural object</td>
</tr>
<tr>
<td>2S</td>
<td>2S</td>
<td>second singular (subject, object, or possessive)</td>
</tr>
<tr>
<td>2SS</td>
<td>2S</td>
<td>second singular subject</td>
</tr>
<tr>
<td>2SO</td>
<td>2S</td>
<td>second singular object</td>
</tr>
<tr>
<td>2D</td>
<td>2D</td>
<td>second dual (subject, object, or possessive)</td>
</tr>
<tr>
<td>2DS</td>
<td>2D</td>
<td>second dual subject</td>
</tr>
<tr>
<td>2DO</td>
<td>2D</td>
<td>second dual object</td>
</tr>
<tr>
<td>2P</td>
<td>2P</td>
<td>second plural (subject, object, or possessive)</td>
</tr>
<tr>
<td>2PS</td>
<td>2P</td>
<td>second plural subject</td>
</tr>
<tr>
<td>2PO</td>
<td>2P</td>
<td>second plural object</td>
</tr>
<tr>
<td>3S</td>
<td>3S</td>
<td>third singular (subject, object, or possessive)</td>
</tr>
<tr>
<td>3SS</td>
<td>3S</td>
<td>third singular subject</td>
</tr>
<tr>
<td>3SO</td>
<td>3S</td>
<td>third singular object</td>
</tr>
<tr>
<td>3D</td>
<td>3D</td>
<td>third dual (subject, object, or possessive)</td>
</tr>
</tbody>
</table>
3DS third dual subject
3DO third dual object
3P third plural (subject, object, or possessive)
3PS third plural subject
3PO third plural object
ABLE abilitative
ABLT ablative
ABS absolutive
ADS adessive
AFT after
ALLT allative
APPRX approximative
ASC associative
BEN benefactive
CAUS causative
CEP counter-expectation particle
CIS cisative
CLSF classifier
CMPR comparative
COM comitative
COME come purposive
COMP complement
CON concessive
CONFIRM confirmative
CONT continuous aspect
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>COORD</td>
<td>coordinator</td>
</tr>
<tr>
<td>DAT</td>
<td>dative</td>
</tr>
<tr>
<td>DECL</td>
<td>declarative</td>
</tr>
<tr>
<td>DEL</td>
<td>delative</td>
</tr>
<tr>
<td>DETRANS</td>
<td>detransitivizer</td>
</tr>
<tr>
<td>DIM</td>
<td>diminutive</td>
</tr>
<tr>
<td>DIR</td>
<td>direct</td>
</tr>
<tr>
<td>DIS</td>
<td>distal</td>
</tr>
<tr>
<td>DT</td>
<td>detransitive</td>
</tr>
<tr>
<td>DUM</td>
<td>dummy</td>
</tr>
<tr>
<td>ELAT</td>
<td>elative</td>
</tr>
<tr>
<td>EMP</td>
<td>emphatic</td>
</tr>
<tr>
<td>ERG</td>
<td>ergative</td>
</tr>
<tr>
<td>EXPR</td>
<td>expressive adverb</td>
</tr>
<tr>
<td>FEM</td>
<td>feminine</td>
</tr>
<tr>
<td>FOC</td>
<td>contrastive focus</td>
</tr>
<tr>
<td>FUT</td>
<td>potential mode/future</td>
</tr>
<tr>
<td>GEN</td>
<td>genitive</td>
</tr>
<tr>
<td>GO</td>
<td>go purportive</td>
</tr>
<tr>
<td>HO</td>
<td>the ‘ho’ part of a discontinuous probability morpheme</td>
</tr>
<tr>
<td>HOR</td>
<td>hortative</td>
</tr>
<tr>
<td>IF</td>
<td>conditional</td>
</tr>
<tr>
<td>IMP</td>
<td>imperative</td>
</tr>
<tr>
<td>IMPFV</td>
<td>imperfective</td>
</tr>
<tr>
<td>IN</td>
<td>inessive</td>
</tr>
<tr>
<td>INCPT</td>
<td>inceptive</td>
</tr>
<tr>
<td>INDEF</td>
<td>indefinite</td>
</tr>
</tbody>
</table>
INF  infinitive
INSTR  instrumental
INTRG  interrogative
LAT  lative
LOC  locative
MASC  masculine
MIR  mirative
MM  middle marking
NEG  negative
NF  non-final marker
NML  nominalizer
NOM  nominative
NUM  number
OBJ  objective
ON  superessive
OPT  optative
ORIENT  orientative
PASS  passive
PFV  perfective aspect
POSS  possessive
PRED  predictive
PRIOR  prior past
PROB  probability
PROG  progressive
PROH  prohibitive
PROS  prospective aspect
PROV  provisional
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROX</td>
<td>proximate</td>
</tr>
<tr>
<td>PSB</td>
<td>possibility modal</td>
</tr>
<tr>
<td>PURP</td>
<td>purposive</td>
</tr>
<tr>
<td>QP</td>
<td>question particle</td>
</tr>
<tr>
<td>RECP</td>
<td>reciprocal</td>
</tr>
<tr>
<td>REFL</td>
<td>reflexive</td>
</tr>
<tr>
<td>REM</td>
<td>remote</td>
</tr>
<tr>
<td>RSP</td>
<td>reported speech particle</td>
</tr>
<tr>
<td>SA</td>
<td>confirmation particle</td>
</tr>
<tr>
<td>SER</td>
<td>serial(concatenated verb)</td>
</tr>
<tr>
<td>SIM</td>
<td>similative</td>
</tr>
<tr>
<td>TAG</td>
<td>tag question</td>
</tr>
<tr>
<td>UNTIL</td>
<td>until</td>
</tr>
<tr>
<td>VBL</td>
<td>verbalizer</td>
</tr>
<tr>
<td>WELL</td>
<td>confirmative</td>
</tr>
<tr>
<td>WHEN</td>
<td>subjunctive/when</td>
</tr>
</tbody>
</table>