VOICE MORPHOLOGY, CASE, AND ARGUMENT STRUCTURE IN MALAGASY

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1. Introduction

The canonical Malagasy clause is divided into two constituents, the *predicate phrase* (PredP), and a definite noun phrase here called the *trigger*. This is schematized in (1) (cf. Keenan 1995, Dahl 1996).

(1)   [PredP V …] [Trigger DP]

When the predicate phrase is headed by a verb, that verb is marked for *voice* to indicate the grammatical function of the trigger. Examples are given in (2) (here and throughout, the trigger is underlined; the morphological breakdown of each verb is given in brackets, with the voice morphemes boldfaced). (2a) illustrates the *actor-trigger* (AT) form, used when the external argument—here, the agent—is the trigger of the clause. The *theme-trigger* (TT) form in (2b) is used when an internal argument—here, the patient— functions as the trigger. Finally, the *circumstantial-trigger* (CT) form in (2c) is used when the trigger is an oblique element—here, the instrument with which the event is carried out. In each case, the trigger follows the predicate phrase, occurring at the right periphery of the sentence. Within the predicate phrase, the order of elements is VSOX: non-trigger external arguments appear right-adjacent to the verb, preceding internal arguments, which precede obliques.

(2) a.   Mamono [< **m**-*aN*-vono]   akoho   amin'ny   antsy   <u>ny   mpamboly</u>
             AT.kill   **m**-Pfx-kill   chicken with-Det   knife   Det farmer
             "<u>The farmer</u> kills chickens with the knife"

     b.   Vonoin' [< vono-**in**] ny   mpamboly amin'ny   antsy   <u>ny   akoho</u>
             TT.kill   kill-**in**   Det   farmer   with-Det   knife   Det chicken
             "The farmer kills <u>the chickens</u> with the knife"

     c.   Amonoan' [< *aN*-vono-**an**] ny   mpamboly akoho   <u>ny   antsy</u>
             CT.kill   Pfx-kill-**an**   Det   farmer   chicken   Det knife
             "The farmer kills chickens with <u>the knife</u>"

In previous work (Pearson 2003, to appear), I used evidence from binding, extraction, and other domains to argue that the trigger is not the subject of the sentence, as usually assumed, but is instead base-generated in the specifier of an A'-projection, *TopicP*, and linked to a null operator in the specifier of a lower projection, *WhP*, as shown in (3) (abstracting away from surface word order; on the right-peripheral position of the trigger, see Pearson (2001)).

(3)   [TopP <u>Trigger</u>ᵢ Top [WhP ***Op***ᵢ [TP V … tᵢ …]]]

The analysis in (3) suggests a novel approach to the voice alternations in (2): Generally, voice morphology is taken to encode active/passive-like alternations in the mapping of thematic roles to the subject (nominative Case-checking) position. However, if the trigger is not the subject of the clause but a topic linked to an A'-chain, it is possible that voice morphology instead indicates the position from which A'-extraction takes place, with the AT form in (2a) marking subject extraction, the TT form in (2b) marking object extraction, and the CT form in (2c) marking oblique extraction.

Under this approach, voice in Malagasy is less like voice in English and more like *wh-agreement*, of the sort which Chung (1998) documents for Chamorro. In A'-extraction contexts in Chamorro, regular subject agreement of the sort shown in (4) is replaced by special morphology indicating whether the ex-

tracted element is a subject, object, or oblique, as in (5). In Pearson (2003, to appear) I suggested that Malagasy voice marking is a 'generalized' version of this type of marking: While in Chamorro wh-agreement is confined to questions, relative clauses, and the like, in Malagasy it appears in all clause types due to a requirement that the specifier of WhP be filled in every clause.

(4)   **Ha**-fa'gasi   si   Juan   i   kareta
          3s-wash   Det Juan   Det car
          "Juan washed the car"

(5) a.   Hayi   f<**um**>a'gasi   i   kareta?   (*subject extraction*)
          who   **um**-wash   Det car
          "Who washed the car?"

     b.   Hafa   f<**in**>a'gasése-nña   si   Henry   pära   hagu?   (*object extraction*)
          what   **in**-wash.Prog-3s.Lnk   Det Henry   for   you
          "What is Henry washing for you?"

     c.   Hafa   pära   fa'gase-mmu   ni   kareta?   (*oblique extraction*)
          what   Fut   Ø-wash-2s   Obl car
          "What are you going to wash the car with?"

In this paper I focus on the voice affixes themselves and propose an account of their distribution. Specifically, I argue that they are realizations of light verbs and Case-checking heads, which combine with the root through head-to-head movement. The distribution of the affixes is determined by the positions from which, and through which, the null operator in (3) moves on its way to the specifier of WhP. For example, the actor-topic prefix *m-* is treated as a nominative Case-checking head, which gets spelled out just in case the operator raises through its specifier. (My analysis is thus in the spirit of Guilfoyle, Hung, and Travis (1992), who also associate voice morphemes with Case licensing.)

2. The Morphology of voice

Before proceeding with this analysis, I offer a quick overview of Malagasy voice morphology. Verbs in Malagasy are formed from *roots*, some of which function independently in the language, either as nouns or as stative predicates. To form a verb stem, the root combines with one of a small set of *verbal prefixes* (glossed "Pfx" in the examples), of which the two most common are *aN-* and *i-*. Some examples of roots and the verb stems formed from them are given in (6).

(6)   ROOT   VERB STEM

          asa   "work, task"   *i*-asa   "work"
          fefy   "enclosure"   *i*-fefy   "be fenced"
          vavaka   "prayer"   *i*-vavaka   "pray"

          feno   "full"   *aN*-feno [ameno]   "fill"
          soratra   "writing"   *aN*-soratra [anoratra] "write"
          tapaka   "broken"   *aN*-tapaka [anapaka]   "break"

Although the choice between *aN-* and *i-* is lexically determined, it does correlate to some degree with transitivity: *aN-* stems are almost always transitive, while *i-* stems tend to be intransitive. As illustrated in (7), there are a large number of roots which can take either prefix, where *aN-* forms a transitive stem and *i-* forms its intransitive counterpart:

(7)   *i*-haja   "be respected"   *aN*-haja [anaja]   "respect (tr.)"

                 i-sasa   "wash oneself"   *aN*-sasa [anasa]   "wash (tr.)"

                 i-voha   "be open"   *aN*-voha [amoha]   "open (tr.)"

Additional affixes are attached to roots and stems to mark voice. There are five morphologically distinct voice forms in Malagasy, listed in the table below. The *actor-trigger* (AT) voice is formed by prefixing *m-* to the stem; while the *circumstantial-trigger* (CT) voice is formed with the suffix *-an*. The other three voices are usually grouped together as the *theme-topic* (TT) voices. These are formed by adding the suffix *-an* or *-in*, or the prefix *a-*. Notice that the verbal prefix is absent in the TT forms, a fact to which I return in the next section.[1]

VOICE	TEMPLATE				EXAMPLES		
AT	**m-**	*Pfx-*	ROOT		**m-***aN*-tafi	>	manafy
					m-*aN*-velar	>	mamelatra
CT		*Pfx-*	ROOT	**-an**	*aN*-tafi-**an**	>	anafiana
					aN-velar-**an**	>	amelarana
TT			ROOT	**-an**	tafi-**an**	>	tafiana
					velar-**an**	>	velarana
			ROOT	**-in**	tafi-**in**	>	tafina
					velar-**in**	>	velarina
	a-		ROOT		**a-**tafi	>	atafy
					a-velar	>	avelatra

Examples of these five forms are given in (8)-(10). The AT form is used when the trigger is the subject of the clause—that is, the sole 'core' argument of an intransitive verb (8a), or the external argument of a transitive verb (8b). The TT voices are used when the trigger is the direct or indirect object of a transitive verb (9) (see sections 4 and 5 for more on the distribution of these affixes).[2] (10) illustrates the CT form, which is used when the trigger bears some oblique role such as instrument, location, or benefactee.

(8)   a.   Mipetraka [< **m-***i*-petrak]   any   Antsirabe   ny   vehivavy

                AT.live   **m-***Pfx*-live   there   Antsirabe Det   woman

                "The woman lives in Antsirabe"

    b.   Manoratra [< **m-***aN*-sorat]   taratasy   ny   mpianatra

                AT.write   **m-***Pfx*-write   letter   Det   student

                "The student is writing a letter"

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[1] For discussion of the rules for deriving the surface forms from their underlying representations, see Keenan & Polinsky (1998), Erwin (1996), Paul (1996a/b). Note only that, in this paper, I follow Erwin in assuming that roots and affixes in Malagasy may end in a consonant. When word-final, continuant consonants are deleted, while non-continuant consonants followed by an epenthetic *a*, in compliance with a surface constraint banning closed syllables (sometimes final consonants undergo mutation prior to epenthesis, as the change from alveo-dental *r* to retroflex *tr* in *a-velar* > *avelatra*). This assumption is at odds with the traditional analysis of Malagasy morphology, as presented by Keenan & Polinsky and others, according to which all roots and affixes are underlyingly vowel-final.

[2] Note that the TT suffixes *-in* and *-an* are generally treated not as separate voice markers, but as lexically-conditioned allomorphs of a single marker. However, Rahajarizafy (1960) notes that there are a handful of verbs which can take either suffix, with a concomitant difference in argument structure (see Pearson 2001 for discussion). Ileana Paul (p.c.) informs me that her consultants reject Rahajarizafy's examples, allowing a stem to take *-in* or *-an*, but not both. Since my speaker accepts Rahajarizafy's examples, I will treat *-in* and *-an* as separate morphemes—while acknowledging that the distinction between them may be disappearing for some speakers.

(9) a. Tapahin' [< tapak-**in**] ny   lehilahy   ny....vahitady
         TT.cut   cut-**in**   Det men   Det vine.rope
         "The men cut the vine rope"

     b. Soratan' [< sorat-**an**] ny   mpianatra   ny....taratasy
         TT.write   write-**an**   Det student   Det letter
         "The student is writing the letter"

     c. Atao   [< **a**-taov] ny....fiomanana....rehetra
         TT.make   **a**-make   Det preparation all
         "All the preparations are being made"

(10) a. Amonoan' [< *aN*-vono-**an**] ny   mpamboly akoho   ny....antsy
         CT.kill   Pfx-kill-**an**   Det farmer   chicken   Det knife
         "The farmer kills chickens with the knife"

     b. Itoeran' [< *i*-toer-**an**   ] ny   ankizy   io....trano....io
         CT.live   *Pfx*-live-**an** Det children this house this
         "The children live in that house"

     c. Amonoan' [< *aN*-vono-**an**] ny   mpamboly akoho   ny....vahiny
         CT.kill   *Pfx*-kill-**an**   Det farmer   chicken Det guest
         "The farmer is killing chickens for the guests"

I now consider each of the morphemes in the above table in turn. I start with the verbal prefixes, and then turn to the AT prefix *m-* and the TT suffix *-in*. Next I consider the TT prefix *a-*. Finally, I discuss *-an*, found in the remaining TT form, and in the CT form.
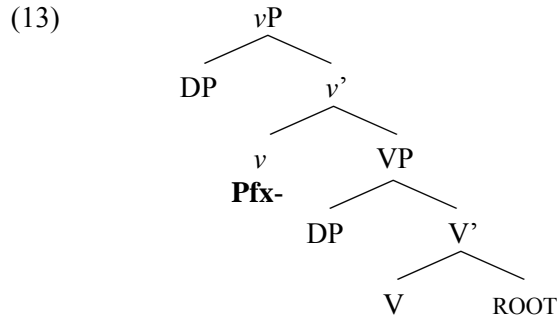

3. The verbal prefixes

As shown in the table above, the verbal prefixes *aN-* and *i-* appear in AT clauses, where the subject is extracted, and in CT clauses, where an oblique element is extracted. However, these prefixes are absent in TT clauses, where an object is extracted. What's the reason for this? Recall that *aN-* and *i-* form verb stems from roots, many of which can occur independently: For instance, (11) shows that these prefixes may be added to a nominal root to form an unergative verb, while (12) shows that *aN-* may attach to a one-place stative root to form a two-place verb, adding an agent argument in the process.

(11)   hira   "song"   **m**-*i*-hira   "sing"
          dihy   "dance (N)" **m**-*aN*-dihy   "dance (V)"

(12) a.   Feno   ny....tavoahangy
          full   Det   bottle
          "The bottle is full"

     b.   Mameno [< **m**-*aN*-feno] ny   tavoahangy   ny....vehivavy
          AT.fill   **m**-*Pfx*-full   Det bottle   Det woman
          "The woman is filling the bottle"

Thinking in terms of a Hale & Keyser approach to argument structure, this suggests that the verbal prefixes are *light verbs*, which take a root or one-place predicate as their complement, and project an external argument in their specifier, as schematized in (13). Assuming that this is correct—and assuming further-
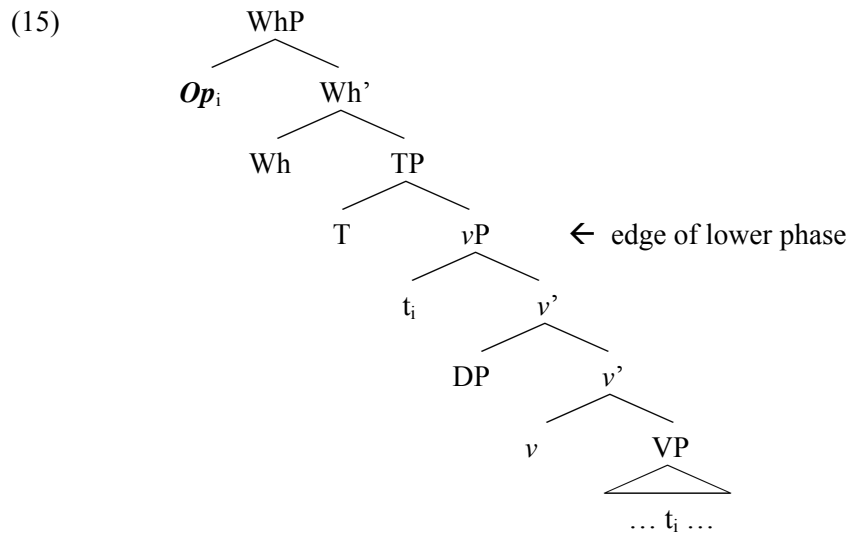
more that obliques are merged outside of *v*P—the correct generalization is as follows: The light verb *v* is suppressed (rendered covert) when an operator undergoes A'-extraction from its complement.

(13)

```
              vP
           /      \
         DP        v'
                /      \
              v          VP
            Pfx-       /    \
                    DP       V'
                           /    \
                          V      ROOT
```

The connection between extraction and the spell-out of the light verb receives a straightforward explanation in terms of *phases*. In his account of successive cyclic movement, Chomsky (1999, 2000) divides the clause into two domains, a *lower phase*, identified with *v*P, and an *upper phase*, identified with CP. In accordance with the Phase Impenetrability Condition in (15), a constituent can move out of a phase only by first moving to its left edge, merging as a specifier of the highest head in the phase. If this is correct, then in order for an operator to extract from the complement of the light verb in Malagasy, it must first raise to become a specifier of *v*P. In other words, Spec of *v*P is an escape hatch for A'-movement to Spec of WhP in TT clauses, as shown in (16):
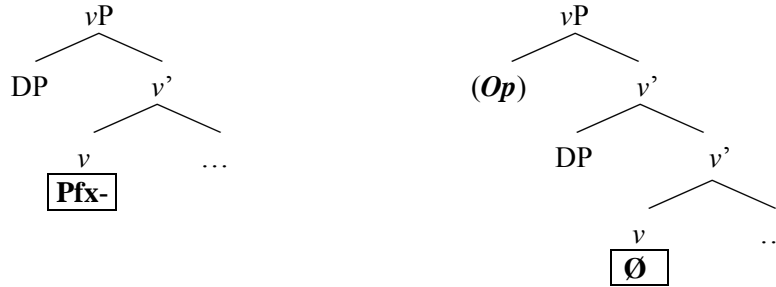
(14)   *Phase-Impenetrability Condition* (adapted from Chomsky 2000, p. 108)

         In phase α with head H, the domain of H is not accessible to operations outside α; only H
         and its **edge** (i.e., the specifier(s) of HP) are accessible to such operations.

(15)

```
              WhP
           /       \
        Op_i         Wh'
                  /       \
                Wh          TP
                         /      \
                        T         vP    ← edge of lower phase
                               /     \
                             t_i       v'
                                    /      \
                                  DP         v'
                                           /    \
                                          v      VP
                                                /  \
                                              … t_i …
```

I propose that the prefixes *aN*- and *i*- alternate with a zero realization of the light verb. The empty light verb has a feature which attracts an operator into its specifier. By contrast, the overt light verbs *aN*- and *i*- lack this feature, and so may not host an operator. In other words, extraction from the lower phase is possible only when the head of the lower phase is spelled out as the zero allomorph; when the lower phase is headed by an overt light verb, this renders it impenetrable for A'-extraction. This is schematized in (17):

(16)

```
        vP                              vP
       /  \                            /  \
     DP    v'                       (Op)   v'
          /  \                            /  \
         v    …                         DP    v'
       [Pfx-]                                /  \
                                            v    …
                                           [Ø]
```

Alternations of this sort are well known in the head of the *upper* phase—that is, the complementizer head. In languages such as Irish, for example, the form of the complementizer depends in part on whether there is an A'-operator in the specifier of CP. The usual finite complementizer is *go*, as shown in (18); however, when an operator raises to (or through) SpecCP, the complementizer *a* is used instead, as shown in (19). I suggest that the alternation in Malagasy between the verbal prefixes *aN-* or *i-* and Ø is a lower phase analogue of this complementizer alternation: In each case, the availability of a landing site or escape hatch for A-bar movement correlates with how the head of the phase is realized. (Examples are taken from Carnie, Harley, & Pyatt 2000, Guilfoyle 2000, and Chung & McCloskey 1987, respectively.)

(17)　　　Ceapaim [**go**　　bhfaca sé　an　madra]
　　　　　think.1s　Comp saw　　he　the　dog
　　　　　"I think that he saw the dog"

(18)　a.　*Caidé* **a**　　chuir sin　i　do　　cheann?
　　　　　what　Comp put　　that in your　head
　　　　　"What put that in your head?"

　　　b.　an　bhean [*Op* **a**　　chuir　t-isteach air]
　　　　　the　woman　　Comp put　　in　　　on.it
　　　　　"the woman who applied for it"

4. Intransitive and monotransitive verbs

Next I turn to the AT prefix *m-* and the TT suffix *-in*. Recall that *m-* appears on the verb when the transitive or intransitive subject is the trigger, as in (20) and (21a), while *-in* appears when the transitive object is the trigger, as in (21b):

(19)　　　Mitomany [< **m**-i-tomani]　ny　zazavavy
　　　　　AT.cry　　　　**m**-Pfx-cry　　Det　girl
　　　　　"The girl is crying"

(20)　a.　Mamaky [< **m**-aN-vaki] boky　ny　zazavavy
　　　　　AT.read　　　**m**-Pfx-read　　book　Det　girl
　　　　　"The girl is reading a book"

　　　b.　Vakin' [< vaki-**in**] ny　zazavavy　ny　boky
　　　　　TT.read　　　read-**in**　Det　girl　　Det　book
　　　　　"The girl is reading the book"

Assuming that Malagasy is a nominative-accusative language, it seems that AT marking correlates with nominative Case, while TT marking correlates with accusative Case. I propose that *m-* and *-in* are realizations of the functional heads which license nominative and accusative Case, respectively: When the

operator which raises to SpecWhP has a nominative Case feature to check, the head which checks it is spelled out on the verb as *m-*, and when the operator has an accusative Case feature, the head which checks that feature is spelled out as *-in*.

First of all, consider the sentences in (22) and (23), featuring a theme-topic verb prefixed with *a-*. As these examples show, the predicate-internal subject may be overt, as in the (b) sentences; or it may be covert, as in the (a) sentences, in which case the agent is construed as unknown or arbitrary. Notice that overt subjects immediately follow the verb, which is suffixed with the *linking morpheme*, glossed "Lnk" in the examples (this linking morpheme is realized as *-y* between two non-continuant consonants, otherwise as *-n'*; I assume that the underlying form of this morpheme is *-ny*).
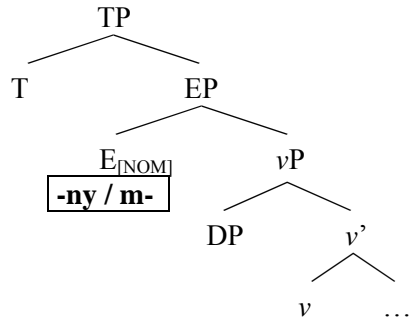
(21) a.   Atosika [< **a**-tosek]   ny   vato
              TT.push   **a**-push   Det stone
              "Someone is pushing the stone" or "The stone is being pushed"

     b.   Atosiky [< **a**-tosek-***ny***] **ny**   **vehivavy**   ny   vato
              TT.push   **a**-push-***Lnk***   Det woman   Det meal
              "The woman is pushing the stone"

(22) a.   Aroso   [< **a**-roso] ny   vahiny ny   sakafo
              TT.serve   **a**-serve   Det guest   Det meal
              "Someone serves the guests the meal" or "The meal is served to the guests"

     b.   Aroson' [< **a**-roso-***ny***] **ny**   **vehivavy** ny   vahiny ny   sakafo
              TT.serve   **a**-serve-***Lnk***   Det woman   Det guest Det meal
              "The woman is serving the guests the meal"

Although the linking morpheme surfaces only on stems taking the *a-* prefix, I will assume that it is also present on stems ending in *-in* and *-an* when they have overt subjects, but fails to surface because of phonological fusion with the *n* of the voice suffix:

(23) a.   Vakina   [< vaki-**in**] ny   boky
              TT.read   read-**in**   Det book
              "The book is being read"

     b.   Vakin'   [< vaki-**in**-***ny***] **ny**   **zazavavy** ny   boky
              TT.read   read-**ina**-***Lnk***   Det girl   Det book
              "The girl is reading the book"

Since the linking morpheme is required to license an overt subject in the predicate phrase, I will assume that it is located in the functional head which checks nominative Case. Adapting an analysis due to Travis (1994), I identify this as the *event head* E, which selects *v*P as its complement, as shown in (24). In addition to checking nominative Case, the event head introduces (or binds) the event argument of the clause, and is in turn selected by the tense head. As an examination of the forms above shows, the linking morpheme is in complementary distribution with the AT prefix *m-*: I will therefore assume (following Travis (1994)) that the *m-* prefix is also in E. So *m-* and *-ny* are alternate realizations of the nominative Case-checking head.
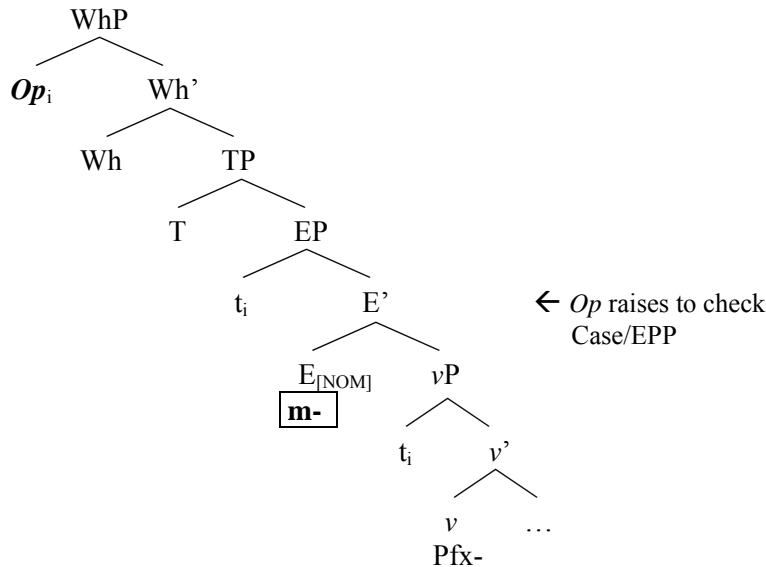
(24)

```
              TP
         ╱          ╲
        T            EP
                 ╱        ╲
           E[NOM]          vP
          ┌────────┐    ╱      ╲
          │ -ny / m- │  DP      v'
          └────────┘         ╱    ╲
                            v      …
```

What determines how E will be realized? Given my theory of triggers, this correlates with whether the subject (i.e., the nominative Case-marked argument) undergoes A'-movement or not: When the subject is an operator which raises to SpecWhP, the verb carries the prefix *m-*, and when the subject remains inside TP, the verb carries the suffix *-ny*. To capture this alternation, I propose that how the E head is realized depends on whether or not it contains an EPP feature in addition to its Case feature—that is, whether or not it projects a specifier, triggering raising of the nominative DP (cf. Chomsky 1999, 2000): When E carries an EPP feature, it is spelled out as *m-*, and when it lacks an EPP feature, it is spelled out as *-ny*. I will refer to a head containing an EPP feature as *strong*, and a head which lacks an EPP feature as *weak*.

When the subject is an operator which raises to SpecWhP to check a feature of Wh, it must pass through the specifier of EP in order to check its Case feature. Consequently, E will have to be strong, and so it will be spelled out as *m-*. The structure is shown in (25) (abstracting away from head-to-head movement). However, when the subject does not raise to SpecWhP, it does not need to pass through SpecEP in the overt syntax. In principle E could strong or weak in such cases. Suppose that economy dictates in favor of the weak form, and so the verb carries the suffix *-ny*. In this case, the subject is spelled out in its base position, Spec*v*P, as in (24), and checks its Case via an Agree relation, without movement.

(25)

```
              WhP
         ╱          ╲
      Op_i           Wh'
                 ╱        ╲
               Wh          TP
                        ╱      ╲
                       T        EP
                              ╱      ╲        ← Op raises to check
                            t_i       E'          Case/EPP
                                  ╱       ╲
                            E[NOM]          vP
                           ┌──────┐     ╱      ╲
                           │  m-  │   t_i       v'
                           └──────┘          ╱    ╲
                                            v      …
                                           Pfx-
```
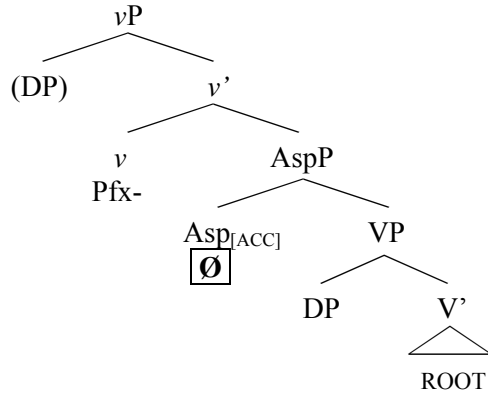
My analysis of the TT suffix *-in* takes essentially the same form. Alongside the nominative Case-checking head E, I assume there is a second functional head responsible for checking accusative Case, located between the light verb and the root. Following Travis (1991), I identify this as the aspect head, which projects an AspP, selected as the complement of the light verb, as in (26).
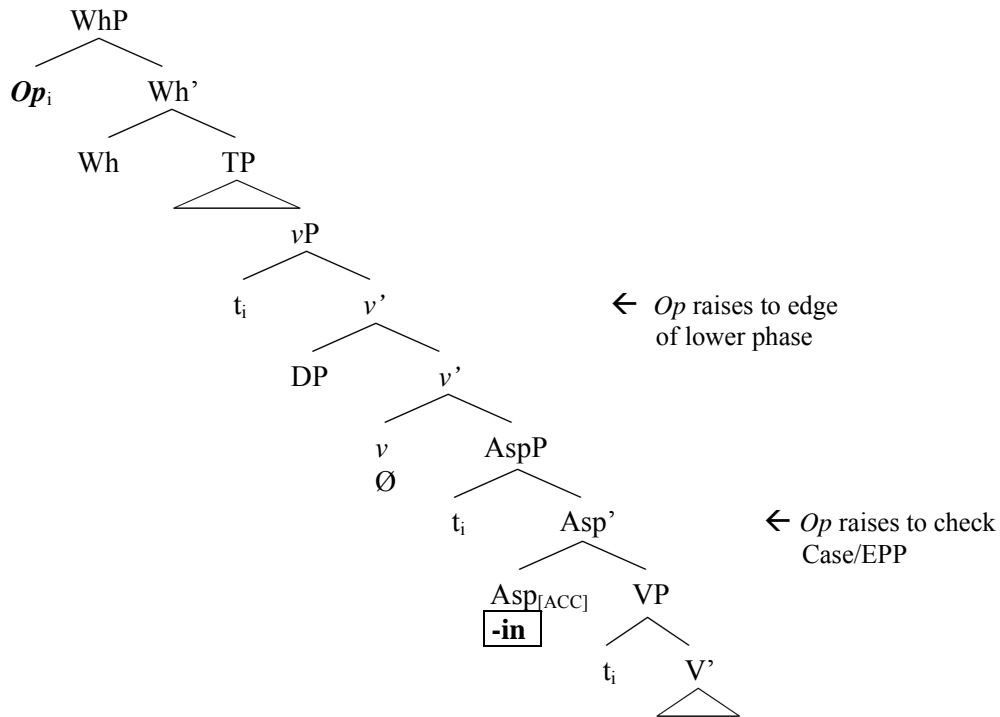
(26)

```
                    vP
            ┌────────┴────────┐
         (DP)               v'
                      ┌──────┴──────┐
                      v           AspP
                     Pfx-    ┌──────┴──────┐
                         Asp[ACC]         VP
                          ┌─┐       ┌──────┴──────┐
                          │Ø│      DP            V'
                          └─┘                   ╱─╲
                                              ROOT
```

Like the event head, the aspect head is spelled out differently depending on whether it is strong or weak. When it is strong, and triggers raising of the object for accusative Case checking, it is spelled out as *-in*; otherwise it surfaces as Ø. When the verb is intransitive, and Asp lacks an accusative Case feature altogether, the Ø variant will be selected. When the verb is transitive, either variant may be selected. Normally the Ø variant will be selected, and the direct object will remain in situ, checking its Case feature without movement, as in (26). However, when the direct object is an operator, its Case is checked via overt movement to SpecAspP. In such cases the aspect head must be strong, and so the suffix *-in* will be inserted, as in (27). From SpecAspP the operator raises to the edge of the lower phase, attracted by the phonetically empty light verb, before raising out of the lower phase to SpecWhP.

(27)

```
                    WhP
            ┌────────┴────────┐
         Opᵢ              Wh'
                    ┌──────┴──────┐
                   Wh            TP
                               ╱───╲
                              vP
                        ┌──────┴──────┐
                       tᵢ            v'            ← Op raises to edge
                               ┌──────┴──────┐        of lower phase
                              DP            v'
                                     ┌──────┴──────┐
                                     v           AspP
                                     Ø      ┌──────┴──────┐
                                           tᵢ           Asp'         ← Op raises to check
                                                 ┌──────┴──────┐        Case/EPP
                                             Asp[ACC]         VP
                                              ┌──┐       ┌─────┴─────┐
                                              │-in│     tᵢ          V'
                                              └──┘                 ╱─╲
```

5. Ditransitive constructions

Although the majority of monotransitive verbs mark the TT voice using the suffix *-in*, as in (28a), there are a number of verbs which take the suffix *-an* instead, or the prefix *a-*, as in (28b-c). The use of *-an* or *a-* in place of *-in* appears to be lexically conditioned and partly idiosyncratic, although Paul (1999) notes that *a-* is found primarily with roots like *tosek* "push", *tsangan* "raise", *latsak* "lower", and *hanton*

"hang", where the internal argument undergoes a change of location or position, rather than a change of state. Following Rappaport & Levin (1988), I will refer to this kind of argument as a *locatum*.

(28) a.   Arahin'   [< arak-**in**-ny   ]   ny   olona   marobe   ny   mpanjaka
            TT.follow   follow-**in**-Lnk   Det people great.many Det king
            "A great many people are following the king"

      b.   Sasan'   [< sasa-**an**-ny   ]   ny   vehivavy ny   akanjo
            TT.wash   wash-**an**-Lnk   Det woman   Det dress
            "The woman is washing the dress"

      c.   Atosiky [< **a**-tosek-ny]   ny   vehivavy ny   vato
            TT.push   **a**-push-Lnk   Det woman   Det stone
            "The woman is pushing the stone"

More often, however, *-an* and *a-* are used with ditransitive verbs. As Paul (1999) discusses, ditransitives in Malagasy fall into various semantic classes: One class, illustrated by *roso* "serve" in (29), includes verbs of transmission, selecting a goal or recipient and a locatum: Here *-an* is used when the goal is the trigge (29b), while *a-* is used when the locatum is the trigger (29c). A second class of ditransitives is illustrated by *didi* "cut" in (30) and *fatrar* "stuff" in (31): This class includes verbs which select a patient argument, and an additional argument denoting an instrument or substance acted upon by the agent to bring about a change in the patient. With verbs of this type, *-an* is used when the patient is the trigger (30b/31b), while *a-* is used when the instrument or substance is the trigger (30c/31c):

(29) a.   Mandroso [< **m**-aN-roso] sakafo ny   vahiny ny   mpamboly
            AT.serve   **m**-Pfx-serve   meal   Det guest   Det farmer
            "The farmer serves the guests a meal"

      b.   Rosoana [< roso-**an**] sakafo ny   vahiny
            TT.serve   serve-**an**   meal   Det guest
            "The guests are served a meal"

      c.   Aroso   [< **a**-roso] ny   vahiny ny   sakafo
            TT.serve   **a**-serve   Det guest   Det meal
            "The meal is served to the guests"

(30) a.   Mandidy [< **m**-aN-didi] antsy ny   hena   ny   mpamboly
            AT.cut   **m**-Pfx-cut   knife Det meat   Det farmer
            "The farmer cuts the meat with a knife"

      b.   Didiana [< didi-**an**] antsy   ny   hena
            TT.cut   cut-**an**   knife   Det meat
            "The meat is cut with the knife"

      c.   Adidy   [< **a**-didi] ny   hena   ny   antsy
            TT.cut   **a**-cut   Det meat   Det knife
            "The knife is used to cut the meat"

(31) a.   Mamatratra [< **m**-aN-fatrar] vary ny   harona ny   mpamboly
            AT.stuff   **m**-Pfx-stuff   rice Det basket Det farmer
            "The farmer stuffs the basket with rice"

b. Fatrarana [< fatrar-**an**] vary ny harona
TT.stuff   stuff-**an**   rice   Det basket
"The basket is stuffed with rice"

c. Afatratra [< **a**-fatrar] ny   harona ny   vary
TT.stuff   **a**-stuff   Det basket   Det rice
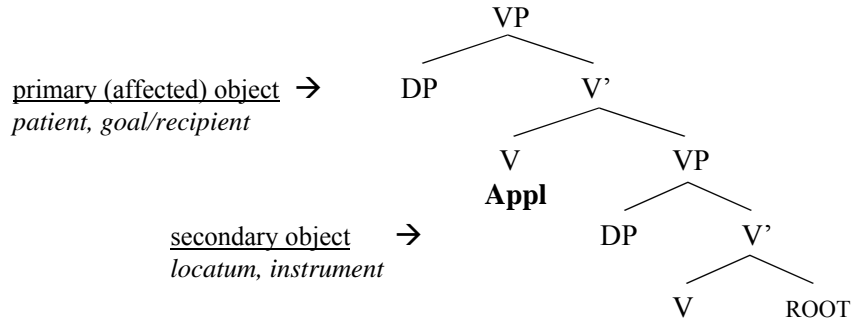"The rice is stuffed in the basket"

The verbs which take both -*an* and *a*- TT forms constitute the *double object* verbs of Malagasy—that is, those verbs which allow two internal DP arguments. Comparing the sentences in (29) above, we see that the trigger of the *a*- clause in (c) corresponds to the leftmost object in the actor-topic sentence in (a) (usually required to be indefinite and adjacent to the verb), while the trigger of the -*an* clause in (b) corresponds to the rightmost object in (a). This pattern holds for (30) and (31) as well. Following Dryer (1986), I will refer to the object farther from the verb as the *primary object* (PO), and the object closer to the verb as the *secondary object* (SO), as in (32). Hence the proper generalization is that the -*an* form indicates that the PO of a double object construction has undergone raising to SpecWhP, while the *a*- form indicates that the SO has undergone raising.

(32)   **secondary   primary**
                             object   object

Mandroso   sakafo   ny   vahiny   ny   mpamboly
AT.serve   meal   Det   guest   Det farmer
"The farmer serves the guests a meal"

Mandidy   antsy   ny   hena   ny   mpamboly
AT.cut   knife   Det   meat   Det farmer
"The farmer cuts the meat with a knife"

Mamatratra vary   ny   harona   ny   mpamboly
AT.stuff   rice   Det   basket   Det farmer
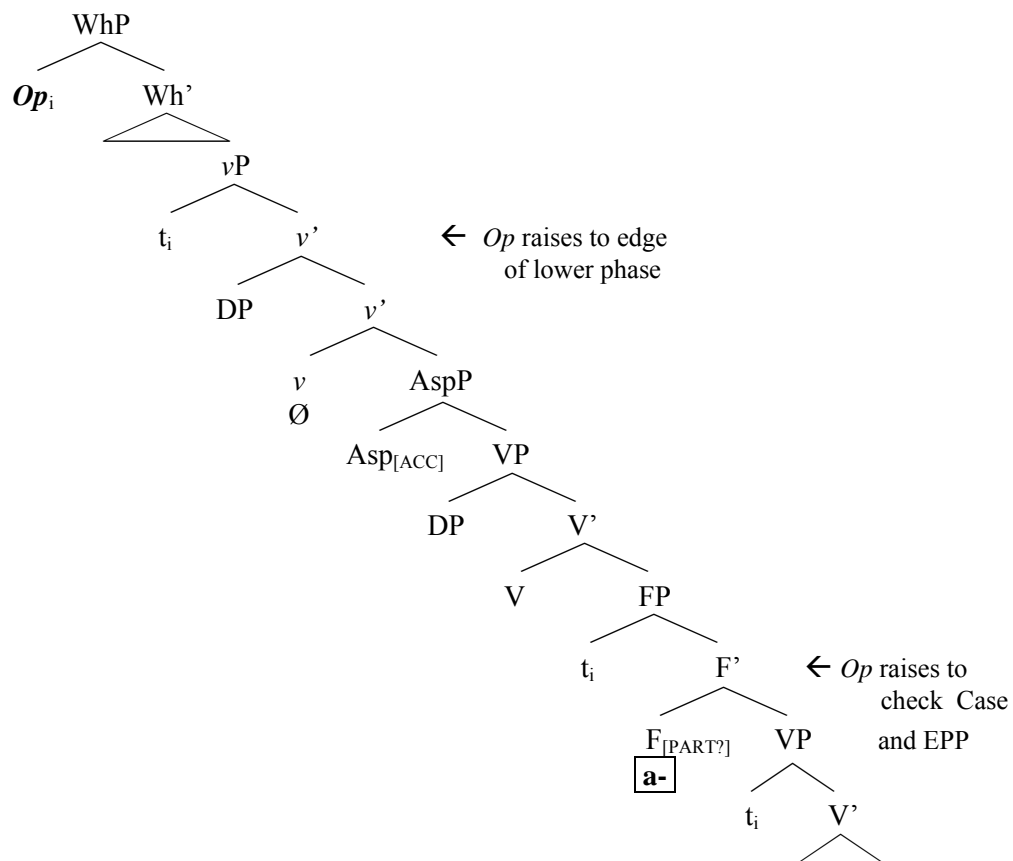"The farmer stuffs the basket with rice"

Following Marantz (1993), I assume that double object constructions are really *applicative* constructions in which the applicative morpheme is null. As schematized in (33) below, Marantz treats the applicative morpheme as a kind of light verb, which selects a phrase containing the lexical root as its complement (cf. Larson 1988). The PO merges as the specifier of the applicative head, while the SO merges within its complement. Based on data from Bantu applicatives, Marantz argues that the structure in (33) compositionally represents the complex event denoted by an applicative construction, such that the PO is interpreted as affected by the sub-event denoted by the complement of the applicative head. Hence, for verbs taking a goal and a locatum, it is the goal which will be mapped to the PO function, while verbs taking a patient and an instrument will map the patient to the PO function.

(33)

```
                                         VP
                                        /    \
primary (affected) object →   DP            V'
patient, goal/recipient                    /    \
                                          V       VP
                                        Appl      /  \
secondary object    →                         DP      V'
locatum, instrument                                  /   \
                                                    V      ROOT
```

Under this analysis, the *a-* prefix receives a similar treatment to *m-* and *-in*, discussed earlier. Suppose that in double object constructions, the Case feature of the primary object is checked by the Asp head, which selects the structure in (33); while the Case feature of the secondary object (partitive Case?) is checked by a lower functional head F in the complement of the applicative head. As with E and Asp, assume that the F head may be strong or weak, where the prefix *a-* spells out a strong F head. When the SO is an operator attracted to SpecWhP, its Case is checked in Spec of FP by a strong F, and the prefix *a-* appears on the verb; otherwise the SO remains in situ, and the F head is null. A sample tree is given in (34): The SO raises first to SpecFP to check Case. It then raises further to the edge of the lower phase (forcing *v* to be null) before raising on to SpecWhP.

(34)

```
                WhP
               /    \
          Op_i      Wh'
                   /▲\
                    vP
                   /   \
                t_i     v'
                       /   \            ← Op raises to edge
                     DP     v'               of lower phase
                           /   \
                          v      AspP
                          Ø     /     \
                           Asp[ACC]    VP
                                      /   \
                                    DP     V'
                                          /   \
                                         V      FP
                                               /   \
                                             t_i    F'      ← Op raises to
                                                   /  \         check  Case
                                            F[PART?]   VP       and EPP
                                             ┌──┐      /  \
                                             │a-│   t_i    V'
                                             └──┘         /▲\
```

As for -*an*, I treat this suffix as the applicative morpheme in (33). When the operator in SpecWhP raises from the PO position, the applicative head which takes the PO as its specifier is spelled out as -*an*, as schematized in (35). When the primary object remains in situ, the applicative head is null.[3]

(35)
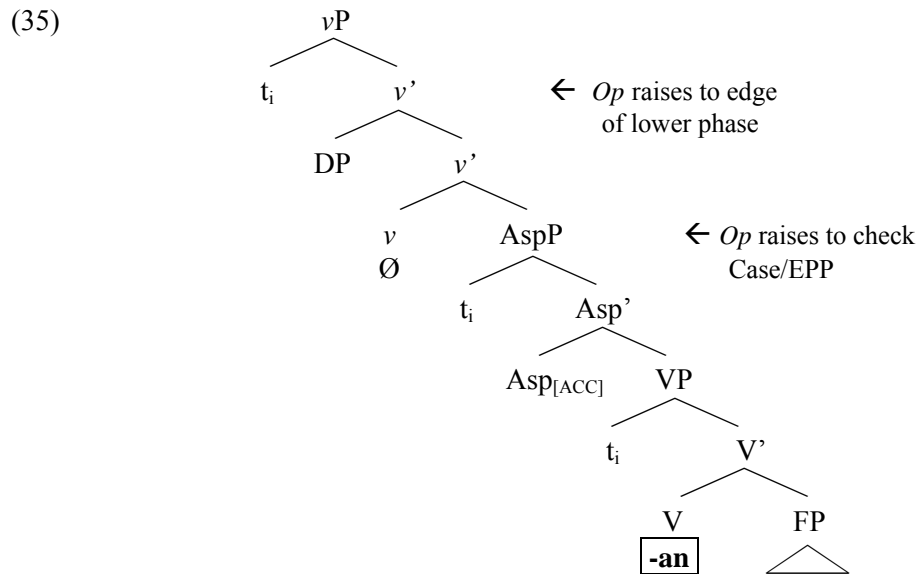
In support of treating -*an* as a spell-out of the applicative morpheme, observe the following: First, it seems that a ditransitive verb in Malagasy accepts the -*an* TT form if and only if it can occur in a double object construction. Consider the verb stem *aN-petrak* "put" in (36), which arguably selects two arguments, a locatum and a goal. As shown in (36b), "put" does not license a double object construction; rather, the goal must take the form of a PP, as in (36a). (36c) shows that, as expected, the -*an* TT form is also disallowed. This is presumably because the goal of a putting event is not normally understood to be affected by the action.

(36) a.   Mametraka [< **m**-aN-petrak] boky   eo   ambonin'ny latabatra   ny   zaza
             AT.put   **m**-Pfx-put   book   there   on-Det   table   Det   child
             "The child is putting books on the table"

      b. * Mametraka [< **m**-aN-petrak] boky   ny   latabatra   ny   zaza
             AT.put   **m**-Pfx-put   book   Det   table   Det   child
             "The child is putting books on the table"

      c. * Petrahana [< petrak-**an**] boky   ny   latabatra
             TT.put   put-**an**   book   Det   table
             "That table is having books put on it"

On the other hand, the -*an* TT form *can* sometimes be used to convert an intransitive stem into a transitive stem by 'promoting' a locative adjunct to the role of affected object. Consider the stem *i-petrak* "sit", the intransitive counterpart of *aN-petrak*: Being intransitive, this stem would not be expected to take TT morphology. However, my consultant allows the -*an* TT form when the location *ny seza* "the chair" is the

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[3] Notice that in the case of (35), the Asp head is null, rather than surfacing as -*in*, as expected. To capture this, I posit a morphological filter which blocks -*in* from attaching to a verb stem which already carries a suffix.

trigger, as in (37b)—but crucially only if the chair is understood as affected by the act of sitting on it; otherwise the CT form would be used. I take the patterns in (36) and (37) as evidence that the TT form with -*an* marks A'-extraction of an affected object in an applicative construction.

(37) a. Mipetraka [< **m**-i-petrak] amin'ilay seza   ny   zaza
          AT.sit   **m**-Pfx-sit   on-that   chair Det child
          "The child is sitting on that chair"

      b. Petrahana [< petrak-**an**] ilay   seza
          TT.sit   sit-**an**   that   chair
          "That chair is being sat in"

One question remains, namely: Why is -*an* is spelled out only if its specifier raises out? Here I follow Sportiche (1992) and Koopman and Szabolcsi (2000) in adopting a generalized version of the 'doubly-filled COMP' filter (38). In accordance with this filter, -*an* is spelled out when its specifier contains a trace; otherwise the applicative head is null. Note that the filter in (38) is meant to hold generally: As an examination of all the trees in this paper will show, each of the projections I posit (with one exception, which I return to below) has an empty head, an empty specifier, or both, at Spell Out.

(38)   *Generalized Doubly-filled COMP Filter*

          If H is a head containing some feature F, * [$_{HP}$ XP [$_{H'}$ H^0 …]] when XP and H^0 both overtly encode F.
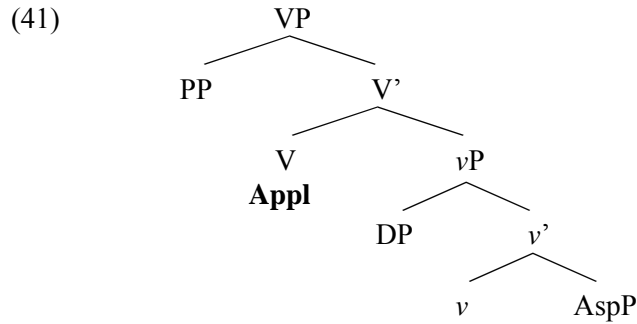
6. The circumstantial voice

I have now provided analyses of the AT form and the three TT forms in the table in section 2. This leaves the CT voice, used when the trigger is an *oblique*—that is, an element which requires a preposition in clauses where it does not function as the trigger. Examples are given in (39b) and (40b), showing CT clauses with locative and instrumental triggers, respectively.

(39) a. Mitoetra [< **m**-*i*-toer   ] ao   amin'io trano io   ny   ankizy
          AT.live   **m**-*Pfx*-live   here in-this house this Det children
          "The children live in that house"

      b. Itoeran' [< *i*-toer-**an**-ny   ] ny   ankizy   io   trano   io
          CT.live   *Pfx*-live-**an**-Lnk   Det   children this house this
          "The children live in that house"

(40) a. Mamono [< **m**-*aN*-vono] akoho   amin'ny antsy   ny   mpamboly
          AT.kill   **m**-Pfx-kill   chicken with-Det knife Det farmer
          "The farmer kills chickens with the knife"

      b. Amonoan' [< *aN*-vono-**an**-ny] ny   mpamboly akoho   ny   antsy
          CT.kill   Pfx-kill-**an**-Lnk   Det   farmer   chicken Det knife
          "The farmer kills chickens with the knife"

Notice that the CT form does not include any new morphemes, but rather a combination of morphemes found in other voice forms. Like the TT forms, the CT takes the linking morpheme -*ny*, indicating that the E head is weak and the subject is Case-licensed in Spec*v*P. The CT also includes the suffix -*an*, which means that the operator raises from the specifier of an applicative head. But unlike the TT form with -*an*, the root carries a verbal prefix. Since by assumption the lower phase is opaque to A'-extraction when a

verbal prefix is present, it follows that the operator in SpecWhP in a CT clause has raised from somewhere outside of *v*P.

   Putting these pieces together, I conclude that the applicative head in Malagasy may be introduced in either the lower phase or the higher phase. In 'low' applicatives, the applicative head merges with the VP containing the root. Its specifier is a DP which checks accusative Case under agreement with the Asp head, and is interpreted as an 'affected object'. In 'high' applicatives, by contrast, the applicative head merges with some larger projection, possibly *v*P. Its specifier does not contain a DP bearing accusative Case and interpreted as affected, but rather a PP. A possible structure is given in (41).[4]

(41)

```
              VP
           /      \
         PP        V'
                /      \
              V          vP
            Appl       /    \
                    DP        v'
                           /      \
                         v         AspP
```
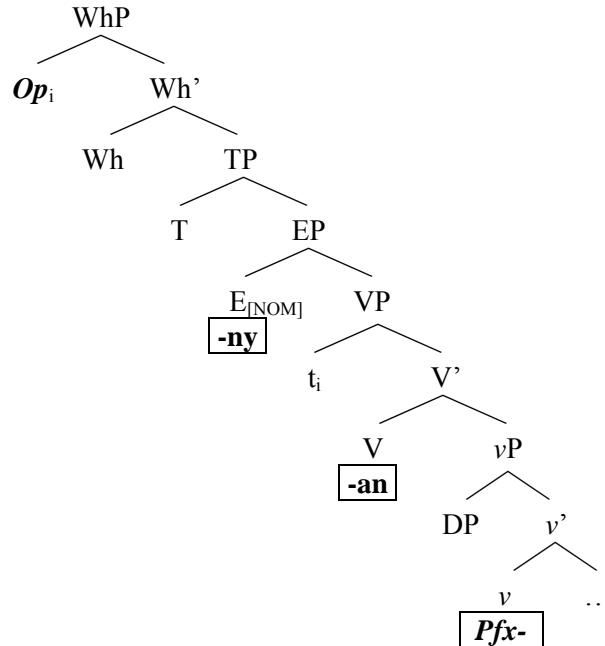
Extraction of an operator from this higher applicative position yields the combination of morphemes associated with the CT voice, as shown in (42): The subject and object remain in situ, their Case-licensing heads spelled out as *-ny* and Ø, respectively. The operator raises from the specifier of the higher applicative head, causing its head to be spelled out as *–an*, in accordance with the 'doubly-filled COMP' filter. No extraction takes place from *v*P, and so the light verb surfaces as a prefix on the verb stem. To explain the absence of a preposition in CT clauses, we may assume (a) that the operator is of category PP, and/or (b) that the oblique operator in SpecWhP (comparable to *dont* in French) does not need Case.

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[4] Because a clause can contain multiple PPs, I must assume that the higher applicative projection can be recursive. It is possible that the lower applicative projection is recursive as well, although no more than projection will contain a DP specifier interpreted as an affected object.

(42)

```
                    WhP
                  /     \
               Op_i      Wh'
                       /     \
                     Wh       TP
                            /     \
                           T        EP
                                  /    \
                            E_[NOM]     VP
                             -ny      /    \
                                    t_i     V'
                                          /     \
                                         V       vP
                                        -an    /    \
                                             DP      v'
                                                   /    \
                                                  v      …
                                                Pfx-
```

One apparent problem with the tree in (42) is that the *v*P projection violates the 'doubly-filled COMP' filter discussed above: The head of *v*P is spelled out as a verbal prefix, while the specifier of *v*P contains the in situ subject. There are various possible solutions to this problem. For example, we could simply expand the tree so that the subject and the verbal prefix end up in different projections. A second, perhaps more interesting possibility is that *v*P, by virtue of being a phase, is somehow exempt from the 'doubly-filled COMP' filter. Adopting Chomsky's (1999) idea that Spell Out operates cyclically, we might speculate that the 'doubly-filled COMP' filter (plausibly a condition on Spell Out) applies only within a given cycle. Suppose that the head of a phase and its specifier are spelled out in different cycles, then it follows that *v*P would be able to have an overt head co-occuring with an overt specifier.

7. Conclusion

In this paper I have argued that the morphemes which combine to form the different voices in Malagasy are realizations of heads which attach to the root via head-to-head adjunction in the syntax. The verb stem-forming prefixes are light verbs, which alternate with a null variant when A'-extraction from the lower phase takes place. The AT prefix *m-*, the TT prefix *a-*, and the TT suffix *-in* are strong Case-licensing heads which surface just in case an operator raises through their specifiers. Finally, the suffix *-an*, found on the CT and on one of the TT forms, is an applicative head, which surfaces when the applicative argument raises out of its specifier, in accordance with a generalized 'doubly-filled COMP' filter.

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