Interpreting External Possession in Malagasy

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Abstract

In Malagasy, a predicate-initial Austronesian language spoken in Madagascar, possession may be encoded in three prominent constructions. This paper focuses on explaining the semantic structure of one of these three, the External Possession construction. This construction is formed by compounding a noun with an adjectival modifier to form a predicate, which then takes a grammatical subject which possesses the modified noun:

(1) [PRED Tso-piainana] izy.
             simple life   3sg.NOM
     'He has a simple life.'

This construction is compared with the structurally-similar *manana*-possession. In External Possession, the possessor appears as a grammatical subject to an intransitive possession predicate, while in *manana*-possession the possessor forms as a grammatical subject to a transitive verb *manana* 'have.' Its form is shown in (2):

(2) [VP Manana fiainana tsotra] izy.
             have   life   simple 3sg.NOM
     'He has a simple life.'

In External Possession, the possessor's relationship with the possessed entity must come from the definition of the possessed entity. This is shown by the possible interpretations of each construction's relationship between the possessor and that which is possessed. Using the concept of relational nouns given in Barker (2019) as a noun which implicitly denotes a relationship between the noun itself and some other entity, I propose that Malagasy External Possession constructions can be understood as grammaticalizing that implicit relation into a subject and its predicate. In this case, the grammatical subject's semantic role is the related entity, and the predicate is a compound formed from the relational noun and some modifier. To account for the necessity of modification to the predicate, I adopt the Restriction operation of Chung and Ladusaw (2003).

1 Introduction

In Malagasy, an Austronesian language spoken in Madagascar, an adjective may appear either as a modifier, in which case it postposes the modified noun, or as a sentential predicate, in which case it appears phrase-initially as other predicates. This is demonstrated in (1).[1]

(1)　a.　[PRED Vaky] ny vera
　　　　　broken DET cup
　　　'The cup is broken'

　　b.　[PRED Mamaky ny boky tsara] aho
　　　　　PRS.AT.read DET book good 1sg.NOM
　　　'I read a good book'

Malagasy may additionally, however, place a noun after its modifier, in which case the modifier + noun acts as the predicate to another nominal element. In such cases, it is often useful to translate into English with forms like *brown-eyed, long-legged, mean-tempered*, for reasons that will be explained in section 5. It is not always possible, however, to translate cleanly this way. (2) shows both these possibilities:

(2)　a.　[PRED Be sandry] Rabe
　　　　　big arms Rabe
　　　'Rabe is big-armed.'

　　b.　[PRED Tsara famaky] ny boky.
　　　　　good read DET book
　　　'That was a good read'

This construction, referred to as External Possession, lacks any specific morpheme which denotes possession explicitly. Despite this, the modified noun is understood to be a quality or part of, a property of, or possessed by the subject which forms with the predicate. I argue here that this interpretation is the result of the lexical properties that the modified noun must contain, and that it is this which allows for this construction to be interpreted as such without explicit morphology. This possession relation arises from the requirement that a possessum – a possessed entity – introduce this relationship lexically. A linear schematic for this construction is shown in (3):

(3)　[MOD NP] DP

Superficially the relationship between an external possessor and that which is possessed may be paraphrased with the word *have* in English. As a general rule this fails in Malagasy, as paraphrases with the lexical verb which introduces possession, *manana*, do not work in every

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[1]The following abbreviations are used in this paper: PR – Possessor, PM – Possessum, AT – Agent Trigger, TT – Theme Trigger, CT – Circumstantial Trigger, DET – Determiner, NOM – Nominative case, ACC – Accusative case, GEN – Genitive case, PRS – Present, PST – Past, FUT – Future, PREP – Preposition, DP – Determiner Phrase, NP – Noun Phrase, AP – Adjective Phrase, RC – Relative Clause, sg – Singular, pl – Plural, 1,2,3 – First, second, third person, FOC – Focus, LNK – Linking morpheme, PRED – Predicate, FA – Function Application, Mod – Modifier

case. I take this as evidence that the possession relation present in External Possession examples is not introduced into the denotation as a null version of the possessive verb.

In section 2, I go over the relevant syntactic background in Malagasy and describe the language's various possession constructions and how they form. In section 4, I describe the limitations on the interpretation of External Possession constructions, and the motivation for assuming the root-introduced relation which I propose gives the construction its meaning. In section 5, I summate the analysis of this phenomenon in Paul (2009) and the evidence it provides for this claim. Finally, in section 6, I propose a general denotation for this construction.

2   Malagasy Background

Malagasy is a macrolanguage of Madagascar, part of the Greater Barito linkage of the Malayo-Polynesian branch of the Austronesian family (Hammarström et al., 2020). It is spoken by about 18,140,080 people in all Malagasic languages, 7,520,000 of which speak Plateau Malagasy, in and around the capital Antananarivo (Eberhard et al., 2020). The data discussed here are in the Plateau Malagasy language.

2.1   The Malagasy Voice System

Malagasy has a morphosyntactic voice system in which the "subject" or "trigger" DP[2] has a specific thematic role depending on the voice. In this paper, this structural position will be referred to as the TRIGGER. The various voices are similar, but not identical to the active-passive alternation found in diverse languages.

These voice alternations trigger morphosyntactic changes. The various voices have a morphological reflex on the verb, and the syntax of the clause will change depending on the voice of the matrix clause, as will now be described: The Agent Trigger (AT) form takes an agent for its trigger, a DP which purposefully affects the verb and complement (if there is one). The Theme Trigger (TT) form often takes a theme as its trigger, a DP which suffers or undergoes the verb's action. Finally, in the Circumstantial Voice (CT) form the trigger is some other oblique element, one which is not an obligatory argument of the verb. The trigger here is a DP alone, which may be compared to non-CT forms of the same verb, as it is important to note that this DP must be introduced with a preposition. The trigger is underlined here, and voice morphology on the verb is marked in bold.

(4) a. Agent Trigger (AT):
         Na-maky   ny vera amin'ny vato ny zaza.
         AT.PST-break DET cup PREP'DET stone DET child
         'The child broke the cup with the stone'
     b. Theme Trigger (TT):

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[2]There is much discussion on this position in Malagasy and its properties. For discussion on this topic, see Keenan (1976); Guilfoyle et al. (1992); Pearson (2005). The forms of these voices are described briefly here but no particular model of the syntax of voice is argued for here, as this model may be adapted to any of the above analyses.

c. Vaki-**an**'ny   zaza amin'ny vato <u>ny</u> <u>vera</u>.
broken-TT'DET child PREP'DET stone <u>DET</u> glass
'The glass is broken by the child with the stone'

d. Circumstantial Trigger (CT):

  A-maki-**an**'ny   zaza ny vera <u>ny</u> <u>vato</u>.
  CT-break.PRS-CT'DET child DET cup <u>DET</u> stone
  'The child breaks the cup with the stone'

The trigger has its own specific properties — it must be definite, and it is the only unit which may be extracted. This may be seen in (5), where the DP *ny trondro* 'the fish' may appear at the beginning of the clause, as opposed to the end, if it is accompanied by the focus particle *no* (Keenan, 1976).

(5)   <u>ny</u>   <u>trondro</u>$_i$ <u>no</u>   didi-**an**'ny vehivavy t_i
      <u>DET</u> fish   FOC cut-TT'DET girl
      'It's the fish that the girl cut.'

It is important to note here that the semantic role of the agent in non-AT verb forms bears the same syntactic relation to the agent-assigning verb as a possessor within a DP is to its possessum. In both cases, the agent/possessor cliticizes to the verb/possessum. This correspondence is described in more detail in section 3.1. This may be seen to reflect a certain correlation between the semantic roles of the possessor and agent. This is not unfamiliar in English, as shown in (6), where the nominalized form of a sentence will take its agent as a possessor. I do not offer any generalization for this pattern either in Malagasy or English, but rather mention it to show that the semantic roles of different constituents' dependents may overlap syntactically.

(6)   a. The artist$_{agent}$ created a masterwork$_{theme}$.

     b. *Nominalization*: [DP The artist's$_{agent}$ creation of a masterwork$_{theme}$.]

2.2 Clause Ordering

Malagasy adjuncts will follow the head that they modify. This extends obviously to adjectives and relative clauses, prepositional phrases, and deictic elements.

(7)   a. Ma-hita   **vonikazo** [$_{AP}$ mangamanga] aho.
        PRS.AT-see flowers   blue   1sg.NOM
        'I see blue flowers.'

     b. Mahita   **ny saka**$_i$ [$_{RC}$ (izay)   nihinana ny trondro-ny   ] izy.
        PRS.AT.see DET cat   (COMP) PST.AT.eat DET fish-3sg.GEN   3sg.NOM
        'She sees the cat who ate her fish.'

In External Possession, however, the adjective precedes the noun it modifies, and a second noun appears finally, which is understood to be the possessor of the modified noun. The puzzle involved with explaining the formation of External Possession in Malagasy lies in explaining how an adjective can still modify a noun when placed before it in this construction. The syntax of this construction is explained in section 5, and the semantic implications in section 6.

3   Possession Strategies in Malagasy

As the purpose of this paper is to explain the differences in interpretation between various possession strategies, I will here lay out the basic composition of each of Malagasy's three major possession strategies. I focus on the differences between the possession strategies that grammaticalize the possessor as a trigger in this paper (External and *manana*-possession), but I describe Internal Possession (where the possessor appears within the possessum DP) nonetheless so as to provide a comparison with non-predicative possession. In this section, all possessors are marked in bold, while possessa appear italicized.

3.1   Internal Possession Construction (IPC)

The Internal Possession Construction in Malagasy is differentiated by a number of features. First, the POSSESSUM (PM) – that which is possessed, or a part or quality of the POSSESSOR (PR), which it has control or determination over or is the whole of – is the head to which the possessor is its dependent, and appears morphologically as a verb to an agent in a non-AT clause. In the IPC, the possessor appears internal to the DP containing the possessum, cliticized to the possessum. This is done through a 'linking' morpheme in the case of a non-pronominal possessor.[3] Pronominal possessors take GENITIVE case, and cliticize to the possessum. This is demonstrated in (8a).

(8)   a.   Rava   *ny trano*-**n'ny**   **nama-ko**
           destroyed DET house-LNK'DET friend-1sg.GEN
           'My friend's house is destroyed.'

      b.   Nanamboatra *ny fiara*-**ko**   Rabe
           AT.PST.fix   DET car-1sg.GEN Rabe
           'Rabe fixed my car'

Note that the possessor takes the same form in this case as a thematic agent in the non-Agent Trigger voices described in §2.1; This may be seen in (9):

(9)   a.   Hoan-i-**ko**   ny manga
           eat-TT-1sg.GEN DET mango
           'The mango is being eaten by me'

      b.   lehibe *ny   trano*-**ko**
           big   DET house-1sg.GEN
           'My house is big'

The possessor may appear in an external phrase to the possessum in two cases: First, when the possessum pseudo-incorporates into a predicate, following Paul (2009). The syntax of this is explained fully in §5. This is the External Possession construction. Second, when the possessum is introduced as the object of a lexical verb analogous to the English *have*, in the *Manana*-possession construction.

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[3]For more on the 'linker,' see Keenan (2000).

3.2 External Possession Construction (EPC)

In External Possession, the possessor appears as the sentential trigger with nominative case (as other triggers), and the possessum appears within the same phrase as its modifier, forming a cohesive predicate phrase. Unlike both the IPC and *manana*-possession, there is no overt morpheme in the sentence which denotes the possession relation between the possessor and possessum. (10) shows examples of EPCs in clauses.[4]

(10) a. Tso-*piainana* **ny mpamboly**.
          simple-life   DET farmer
          'The farmer has a simple life.'

      b. Very *hevitra*   **Rakoto**
          lost   thoughts Rakoto
          'Rakoto is confused.'

Table 1 shows a number of possible EPC predicates in Malagasy, separated by broad semantic typology:

Table 1: A sample of EPCs by predicate type

	Example	Composition	Translation
Quality	*madio akanjo*	clean + clothes	'clean-clothed'
	ratsy fanahy	bad + spirit	'mean'
	tso-piainana	simple + life	'(have) a simple life'
	tsara tarehy	good + face	'beautiful'
Dimension	*lehibe vatana*	big + body	'big-bodied'
	be nify	big + tooth	'big-toothed'
	lava volo	long + hair	'long-haired'
Colour	*fotsy volo*	white + hair	'white-haired, old'
Quantity	*maro karazana*	many + types	'(be) of many types'
	be trano	lots + houses	'(have) a lot of houses'
Event	*very hevitra*	lost + thoughts	'confused'
	rovi-body	torn + bottom	'(have) a torn bottom'
Human propensity	*kinga saina*	adroit + mind	'quick-minded, smart'
Unaccusative V	*miasa loha*	works + head	'worried'
	miasa vatana	works + body	'exercises'

3.3 *Manana*-possession

In addition to the two other constructions, possession may be expressed by the verb *manana* which behaves much like the English *have*, grammaticalizing the possessor as a trigger and the possessum as an object.

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[4]A number of these External Possession constructions seem to be variable either between speakers or over time, as a number of the sentences in the landmark study of the phenomenon, Keenan and Ralalaoherivony (1998), were rejected as either ungrammatical or grammatical but incoherent.

(11) a. Manana *vola*   *betsaka* **ny**   **mpandrafitra**.
     have   money much DET carpenter
     'The carpenter has a lot of money.'

    b. Te   h-anana   *alika* **aho**.
     want FUT-have dog 1sg.NOM
     'I want a dog'

4 Interpreting External Possession

The different qualities of External Possession distinguish the construction from the *manana*-possession form which may contain identical lexical elements. These qualities show the ways in which the interpretations differ when this is the case. In this section I will cover a few of the ways the interpretation of an EPC either changes or becomes ungrammatical when in the form of *manana*-possession. I take this as evidence that External Possession involves an abstract relation which is not equivalent to that which *manana* denotes. I motivate this analysis syntactically in section 5 by assuming Paul's (2009) syntactic analysis of Malagasy External Possession.

4.1 Possessor Affectedness/Control

The External Possession Construction cannot be said to express 'possession' in an equivalent sense to the *manana* construction. Instead, that the relation between EPC-possessor and EPC-possessum is one of interconnectedness – anything that affects one affects the other. An EPC may form out of elements which disallow *manana*-possession.

This arises from the fact that *manana*-possession may be incoherent or ungrammatical in a case where an EPC composed of the same elements is acceptable. It may be seen in (12) that an EPC may be used in a case which renders *manana*-possession ungrammatical, possibly due to the contradictory interpretation of "having" an item which is obligatorily not in one's own possession.[5]

(12) a. **Very asa**   ny namako.
     lost   work DET friend.1SG.GEN
     'My friend lost their job.'

    b. *Manana **asa**   **very** ny namako.
     have   work lost DET friend.1SG.GEN.
     Intended: 'My friend lost their job.'

There is a distinction between a possessum which the possessor has control over and a possessum which affects a possessor by an implicit relationship between the two. For example, in (12a), DP *ny namako* 'my friend' is able to grammatically 'possess' a job that has been lost not because they control it, but because the job is implicitly understood to be the friend's, anything that affects it will impact the friend. This may be compared with (12b), in which the possession relation between the same elements is unacceptable.

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[5]Thanks to Jessica Coon for pointing out this fact.

In cases in which both *manana-* and external possession are permissible, the interpretation changes to reflect whether the sentence expresses control over the modified possessum or the experience of modification of the predicate. To this end, compare (13a) with the example in (13b). Each is grammatical in its own given context, but unacceptable in the other's context. That is, it would be inappropriate to say *Manana pneu vaky aho* 'I have broken wheels' when explaining why one is late, and vice versa (Vololona Razafimbelo, p.c.).

(13) a. Manana **pneu vaky** aho.
 have wheel broken 1sg.NOM
 I have broken wheels. (Context: I own a junkyard containing broken wheels)

 b. **Vaky pneu** aho.
 broken wheel 1sg.NOM
 I have a flat tire. (Context: I'm calling to tell my boss why I am late)

4.2 Partitivity, Inalienability, and Implicit Relation

An EPC predicate is often a part, quality, or inalienable possession of the sentential possessor, which is interpreted as the whole, the one with that quality, or the inalienable possessor. Note that there is no grammatical reason to separate these categories, and no distinction between them may be found in the formation of EPCs:

(14) a. **Quality:**

 Tsara fanahy ny olona.
 good spirit DET people.
 'People are good-spirited.'

 b. **Part:**

 Lehibe vatana ny hazo sequoia
 big trunk DET tree sequoia
 'Sequoia trees are big-trunked.'

 c. **Inalienable Possession:**

 Kinga saina izy.
 adroit mind 3sg.NOM
 'They are quick-minded.'

From this, it may be seen that the possessor and possessum implicitly necessitate each other's logical existence. For example, the use of *vatana* 'trunk' or 'body' must directly correlate to something which has a trunk or a body – the word itself is possessed, but the possessor is understood logically and not required in the utterance itself. The fact that the possessor is an inherent part of the possessum is demonstrated in (15). This example shows that in a minimal pair composed with identical possessors and modified possessa, the interpretation varies in whether or not the 'bad spirit' is inherent to the child or not; the *fanahy* in (15a) is the child's own, while in (15b) this is explicitly not the case.

(15) a. **Ratsy fanahy** ny   zaza.
          bad   spirit   DET child
          'The child is mean.'

      b. Manana **fanahy ratsy** ny   zaza.
          have   spirit   bad   DET child
          'The child is possessed.'
          literally: 'The child has a bad spirit.'

4.3   Modification Affectedness

It may also be seen that the interpretation of the EPC is that the fact that the modification of the possessum affects the possessor, as demonstrated by (16). In (16a), the carpenter is rich, but in (16b), the carpenter may be poor, but carrying a lot of physical money with them (Vololona Razafimbelo, p.c.). This exemplifies the distinction between experiencing the plurity of money as related to the possessor in (16a) and having control over the entity denoted by *vola* 'money' in (16b)

(16) a. **Be   vola**   ny mpandrafitra.
          much money DET carpenter
          'The carpenter is rich.'

      b. Manana **vola   be**   ny mpandrafitra.
          have   money much DET carpenter
          'The carpenter has a lot of money.'

Additionally, there is a distinction between *manana*-possession and EPCs when it comes to the quality of the possessor. Using the same example as above, (17) shows that the possessor *ny mangazay* 'the store' is allowed with *manana*, but incoherent when expressing possession over an EPC. Under the generalization that EPC predicates attribute the affectedness of the possessor by the possessum modification, this may be understood as a restriction on EPC-possessors which may not be pragmatically construed as having an inherent relation to the possessum which would necessitate affectedness.

(17) a. Manam-bola(=manana vola) be   **ny mangazay**.
          PRS.AV.have-money   much DET store
          'The store has lots of money.'

      b. #Be   vola   **ny mangazay**.
          much money DET store
          'The store has a lot of money.'

      c. Be   vola   **Rasoa**.
          much money Rasoa
          'Rasoa is rich.' (not necessarily physical money)

In comparing these details of the interpretation of EPC predicates against *manana*-possession, I come to the following generalizations: first, the possessor of a possessum within an EPC must have a relation to the possessum which necessitates the 'affectedness' of the possessor, and second,

that this is distinct from the possession expressed by *manana*, although the two may form with identical elements, as in (15) and (16).

From these facts, I suggest that the affectedness interpretation of EPCs comes about due to the possessum being inherently related to the possessor by virtue of being a relational noun, i.e., one denoting a 2-place predicate (Barker, 2019). The implications for this are discussed in section 5. Therefore, as the possessor must be interpreted as affected and often the possessum is obviously a part or quality of the possessor, I argue that the possessor is the argument introduced by the relational noun in logical interpretation. This interpretation follows from the binding analysis between possessor and relational argument proposed by Paul (2009). This too will be explained in section 5.

5 Analyzing External Possession

5.1 Pseudo-Incorporation Analysis

Paul (2009) argues that these cases of External Possession form through pseudo-incorporation of a bare NP possessum to a predicate which modifies the possessum. Under this analysis, the possessum appears as a bare NP complement to the predicate. This unit then merges with a functional head labelled v_{have} which introduces the possessor in its specifier. The possessor binds to a covert (unrepresented in the phonetic form of the phrase) argument position within the predicate, which I take to necessitate. This possessor then moves to the trigger position, which is represented here in (18), as in Paul (2009) as the specifier of TP, although this analaysis does not exclude other analyses of the Malagasy trigger that place it elsewhere in the structure.

(18) a. Fotsy nify Rabe.
        White teeth Rabe
        'Rabe has white teeth.'   (Paul, 2009, 13a.)

      b. (Paul, 2009, 13b.)
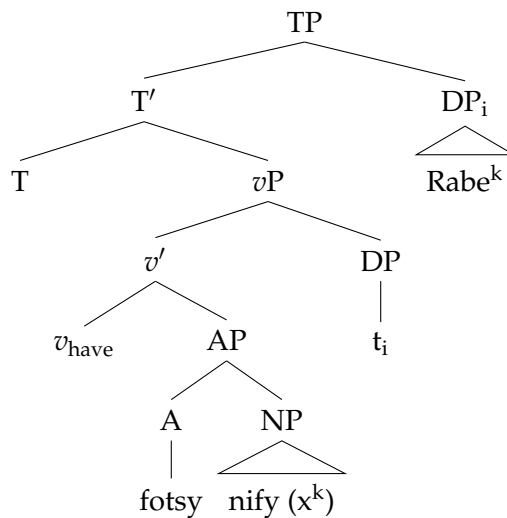
Paul's (2009) analysis includes a variety of constructions that all share the property of a binding relation between the 'external possessor' and some unfilled argument. In EPCs, this

unfilled argument position is one that is introduced implicitly by a relational noun, represented in (18b) by (x^k), which is merely shorthand for the this argument, where superscript 'k' shows that this argument is co-indexed with *Rabe* here.

The existence of this implicit argument is motivated by two facts: First, that the possessum of a Malagasy EPC is "often a relational noun, one that expresses a relation between objects rather than just a property of objects" (Keenan and Ralalaoherivony, 1998, §1.3.1). Some various possible possessa to this effect are shown in table 2. Secondly, the nature of relational nouns is that they introduce an implicit relation with the root nominal. Barker (2019) defines relational nouns as those which denote 2-place relations. This importantly allows for both the explicit entity (in EPCs, the possessum) and the related entity (in EPCs, the possessor) to be included in the denotation of the predicate without being introduced by any covert head in the syntax. Therefore, I take v_{have} to be a structural requirement of introducing an argument overtly, but in interpreting an EPC, a new argument – one not already introduced by a relational noun – may not merge with v_{have} as a possessor. In this view, the possessum must obligatorily contain two arguments, which is expected following Barker (2019); both elements of the two-place relation are overt in this construction.

Table 2: A sample of a few types of externally-possessable nouns.

Personal possessions		Body parts		Characteristics	
Ex.	Trans.	Ex.	Trans.	Ex.	Trans.
trano	house	*vatana*	body	*feo*	voice
fiara	car	*tanana*	hand	*endrika*	appearance
vola	money	*tarehy*	face	*karazana*	types
akanjo	clothes	*pneu*	wheel	*asa*	job
lakile	keys	*nify*	teeth	*fanahy*	spirit

I take the v_{have} head here to be analogous to the little *a* head *-ed* in English which forms External Possession adjectives from a relation (such as *blue-eyed, long-legged, three-toed, quick-witted*). This *-ed* morpheme in English denotes the following in (19) from Nevins and Myler (2014), which states that a^0 produces a predicate from a relation R:

(19) $[\![-a_{-ed}]\!] = \lambda R_{\langle e, \langle e, t \rangle \rangle}.\lambda x_e.\exists y_e.[R(x)(y)]$ (Nevins and Myler, 2014, (11))

I propose that this denotation may be readily adapted to Malagasy with little alteration, as shown in section 6.

Malagasy EPCs are interpreted similarly despite their diverse forms and lack of a common morphological reflex between them expressing the relationship between possessor and possessum. Per this analysis, I propose that Paul's v_{have} is the syntactic reflex of grammaticalizing a root-introduced binder into the phrase as an overt element rather than introducing the possession relation itself.

6   EPC Decomposition in Malagasy

Given the facts of EPCs discussed above, I propose the following general schematic for the denotation of Malagasy EPCs, followed by an example. I take the relation R here to denote

any logical relation between the possessum and the possessor that is present, whether an implicit whole to a part, possessor/owner, or quality. For the decomposition of the Adjective-Noun predicate, I tentatively propose that this is an example of the Restrict function of Chung and Ladusaw (2003), explained below. The existential quantifier over the variable y I take as derived from the fact that there is no overt entity which is specified to be the modified possessum. The reality of this is explored below. With these facts in mind, I take the schematic denotation of EPC predicates to match (20):

(20) $[\![EPC]\!] = \lambda P(y)_{\langle e,t \rangle}.\lambda Q(y)_{\langle e,t \rangle} \lambda R_{\langle e,\langle e,t \rangle}.\lambda x_e.\exists y_e.[R(x,y) \ \& \ P(y) \ \& \ Q(y)]$

In the final denotation, it may be seen that the possessum is an $\langle e,t \rangle$ function. While I am generally agnostic as to whether this is truly the case, I suggest it may explain the requirement observed by (Keenan and Ralalaoherivony, 1998, (15)) that the possessum be indefinite or generic. Assuming here that an indefinite noun is an NP and not a DP, and that an NP is an $\langle e,t \rangle$ function in order to form a generic predicate nominal, as in (21):

(21) [$_{\text{PRED}}$ Biby] ny saka.
       animal   DET cat
       'The cat is an animal.'

Taking $[\![biby]\!]$ as the $\langle e,t \rangle$ function $\lambda x_e.\text{Biby}(x)$, (21) takes a single entity, here **ny saka**, producing a semantically complete sentence:

(22) $[\![biby \ ny \ saka]\!] = \lambda f_{\langle e,t \rangle}.\lambda x_e.f(x)\textbf{(Biby)}$
       $\lambda x_e.\text{Biby}(x)\textbf{(ny saka)}$
       Biby(ny saka)

The required indefiniteness of the EPC possessum therefore may be seen to motivate the adoption of Chung and Ladusaw's (2003) PREDICATE RESTRICTION operation. If both the modifier of the possessum and the possessum itself are naturally of type $\langle e,t \rangle$, then how may the 'modified possessum' interpretation arise, if there is no entity to saturate the argument of the modifier $\langle e,t \rangle$ function? The predicate restriction operation shows that this is possible by restricting the domain of the modifier to the subdomain which has both the property of the modifier and the property of the generic possessum. The function of this operation is shown in (23):

(23) Restrict (($\lambda y \lambda x$ [feed$'$(y)(x)], dog$'$)   (Chung and Ladusaw, 2003, (12))
       $= \lambda y \lambda x$ [feed$'$(y)(x) & dog$'$(y)]

Applying this same function to the Malagasy EPC examples derives the following practical example. (24b) shows the proposed composition of the sentence in (24a):

(24) a. Lehibe vatana ny hazo.
          big   trunk DET tree.
          'The tree is large-trunked.'

b. $\lambda P(y)_{\langle e,t\rangle}.\lambda Q(y)_{\langle e,t\rangle}.\lambda R_{\langle e,\langle e,t\rangle\rangle}.\lambda x_e.\exists y_e.[R(x,y) \ \& \ P(y) \ \& \ Q(y)]$

The schematic for a Malagasy EPC.[6]

FA $\lambda P(y)_{\langle e,t\rangle}.\lambda Q(y)_{\langle e,t\rangle}\lambda R_{\langle e,\langle e,t\rangle\rangle}.\lambda x_e.\exists y_e.[R(x,y) \ \& \ P(y) \ \& \ Q(y)](\lambda y_{\langle e,t\rangle}.$**Lehibe(y))**

The predicate **lehibe** *'is big' joins through function application, taking the place of the arbitrary function* $P(y)$.

Restrict $\lambda Q(y)_{\langle e,t\rangle}\lambda R_{\langle e,\langle e,t\rangle\rangle}.\lambda x_e.\exists y_e.[R(x,y) \ \& \ \text{Lehibe}(y) \ \& \ Q(y)](\lambda y_{\langle e,t\rangle}.\lambda x_e.$**Vatana(y) & Has.part(x,y))**
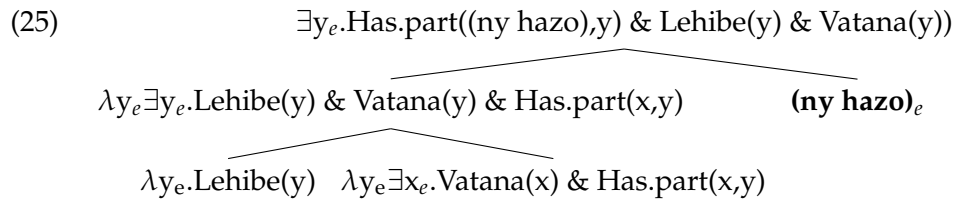
The NP-predicate/possessum merges by restricting the function $P(y)$, *and the implicit relation merges with the function* $R(x,y)$.

FA $\lambda x_e.\exists y_e.[$**Has.part(x,y) & Lehibe(y) & Vatana(y)](ny hazo)**

Finally, the single entity merges as the unquantified argument x

⟦*Lehibe vatana ny hazo*⟧ = $\boxed{\exists y_e.[\text{Has.part}((\text{ny hazo}),y) \ \& \ \text{Lehibe}(y) \ \& \ \text{Vatana}(y)]}$

This may be represented in tree form as (25):

(25) $\qquad\qquad \exists y_e.\text{Has.part}((\text{ny hazo}),y) \ \& \ \text{Lehibe}(y) \ \& \ \text{Vatana}(y))$

$\lambda y_e \exists y_e.\text{Lehibe}(y) \ \& \ \text{Vatana}(y) \ \& \ \text{Has.part}(x,y)$ $\qquad$ **(ny hazo)**$_e$

$\lambda y_e.\text{Lehibe}(y)$ $\quad$ $\lambda y_e \exists x_e.\text{Vatana}(x) \ \& \ \text{Has.part}(x,y)$

The final denotation may be therefore paraphrased as: "There is something such that *ny hazo* has it as a part, and it is both big and a trunk."

7 Discussion

The issue remains of explaining the requirement for an EPC possessum to be modified by an adjective. The answer may be pragmatic in nature, if it is incoherent for the affectedness interpretation of the construction not to be somehow used in the reading. English, having the overt derivational morpheme *-ed* that forms an adjective from the EPC relation, has a clear example of an externally possessed unmodified possessum (Nevins and Myler, 2014, (19)) in (26). The exact criteria that necessitate a modifier on an externally-possessed possessum I leave for further work.

(26) John is bearded.
⇒ John has a beard.

Secondarily, the question remains of the use of Malagasy EPCs in discourse. They may be used as predicates or attributes in various forms, and may occasionally undergo nominalization without overt morphological change, as in *menamaso* – the name of a political group in 19th century Madagascar, or *ratsy fanahy* 'a mean person.' These two examples, of which there may be more, appear to be EPCs based on the adjective-initial order. Compare these with forms such as *ranomasina* 'ocean, lit. water-holy' in which the modifying adjective comes after the head nominal as in standard non-compounded attribution.

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[6]Note that the existential quantifier over the argument *y* is not introduced by any compositional element, but rather arises out of the syntactic schematic that the various elements are applied to under the application of semantic rules.

The question of the role of a modifier in external possession constructions cross-linguistically may also be considered in relation to the problems of interpreting EPCs discussed here. More broadly, the general requirement that exocentric compounds – those which refer to an entity not found within the literal meaning of its components – be composed of more than one discrete term is a remaining issue that I leave for later work.

8 Conclusion

The various features of the relation between possessor and possessum in Malagasy External Possession may be uniformly explained by assuming that the relation is introduced by the possessum noun root. Under this analysis, inherent involvement of the possessor, lack of possessive morphemes, and the requirement that the possessum is a relational noun, are each explained. The inherent involvement criterion is explained by the fact that, following Paul (2009), the grammaticalized possessor/trigger is coreferenced with the implicit relation introduced by the possessum. The lack of possessive morphemes is explained by the lack of external functional heads which introduce a possession relation between entities; the relation is lexically based on the inclusion of the possessum. As for why the possessum must be a relational noun, without the implicit relational argument, there could be no specification of the related entity which provides the possessor with the ability to be an element of the denotation.

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