Cooperating constructions in Lai "lexical insertion"

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Abstract. In this paper we investigate the factors conditioning a morphological alternation on verbal heads in Lai. We show that this alternation eludes a simple characterization and instead exhibits a many-to-many form–function mapping. We will further show that the facts can be given a straightforward analysis in terms of default conditions based on valence and polarity, together with various constructional overrides. Our analysis thus follows recent proposals in HPSG, in particular Malouf (forthcoming), in using a constructional type hierarchy with defaults ("cooperating constructions") as an alternative to an Optimality Theoretic system of ranked violable constraints.

1 Introduction

From a constraint-based perspective "lexical insertion", in the typical cases, involves a relatively straightforward matching of lexical requirements and syntactic context. Morphological variation on heads ordinarily means that a particular form of the head can only occur in a particular syntactic environment. For instance, the morphological distinction between an active and a passive form of some lexeme can be viewed in terms of different ways in which the lexeme determines properties of its syntactic enviroment, specifically in terms of number and morphology (case) of its dependents.[1]

Even in English, however, there exist cases in which the interplay between morphological form and syntactic context arguably works in the opposite direction, i.e., where the constructional context determines the morphology of some head. A prominent example is the distribution of the negated 1st singular form of *be*.[2] In the standard variety, this expression occurs as *aren't* in inverted clauses (1a) while no form is available to occur in non-inverted contexts (1a):

(1) a. **Aren't** I a clever person?

b.*I **aren't** a clever person.

Such facts are standardly modeled by means of such devices as the head feature INV, which allows us to require of 1st singular *aren't* that it appear only in $\left[\text{INV } +\right]$ contexts. The feature INV is thus a device to connect the lexical form to its constructional environment of occurrence.

In this paper, we investigate the interplay of morphological form and constructional context in Lai (also known as Hakha Chin), a Tibeto-Burman language of the Kuki-Chin/Naga branch spoken mostly in Western Burma, parts of Bangladesh, and India's Mizoram province. We will show that the constructional determination

[1] Of course, from a constraint-based perspective, the causal connotations of such notions are meaningless at the level of determining well-formedness via constraint satisfaction. Nevertheless, they are useful in reasoning about grammar design.

[2] We assume here, with Zwicky & Pullum (1983), that "contracted" negated forms are part of the inflectional paradigm of auxiliaries in English.

of verbal head morphology, which appears fairly unusual in English, is ubiquitous in the language and strongly suggests an analysis along Malouf's (forthcoming) notion of "cooperating constructions."

2 Stem alternations in Lai

Most verbs in Lai exhibit an alternation in stem morphology, which is illustrated in (2) for the verb *'it/'i'* ('sleep').

(2) a. Mangkio 'a-**'it**.
Mangkio 3SG-sleep.I
'Mangkio slept/is sleeping.'

b. Mangkio 'a-**'i'** tsa-'a', ...
Mangkio 3SG-sleep.II because
'Because Mangkio slept/was sleeping, ... '

In the example in (2a), the verb occurs in what we will call its "stem I" variant (*'it*) whereas the example in (2b) illustrates this verb in its "stem II" alternative (*'i'*). We now turn to the conditions that govern the distribution of stem I vs. stem II.

3 Conditions on stem choice

3.1 Stem alternation and ergativity

Starting with what we will call the most "unmarked" syntactic environment—i.e., affirmative root declarative clauses—the choice of stem in Lai is linked in a fairly direct way to argument structure. The basic pattern is that of intransitive verbs of all kinds exhibiting stem I morphology (3), whereas transitive verbs are realized morphologically as stem II, (4).

(3) a. Mangkio 'a-**'it**.
Mangkio 3SG-sleep.I
'Mangkio slept/is sleeping.'

b.*Mangkio 'a-**'i'**.
Mangkio 3SG-sleep.II

(4) a. Mangkio ni' vok 'a-**tsook**.
Mangkio ERG pig 3SG-buy.II
'Mangkio is buying/bought a pig.'

b.*Mangkio ni' vok 'a-**tsoo**.
Mangkio ERG pig 3SG-buy.I

Transitive verbs occurring in the unmarked environment obligatorily require that the subject be accompanied by the ergative marker *ni'*. Absence of this marker in the context of stem II morphology leads to unacceptability, as is demonstrated in (5).

(5) *Mangkio vok 'a-**tsook**.
Mangkio pig 3SG-buy.II

Importantly, the notion of transitivity governing stem choice is quite directly tied to the existence of a second *nominal* dependent, in addition to the subject. That is, the presence of other types of dependents, such as oblique locational, directional, or temporal modifiers, does not cause a notionally intransitive verb to occur with stem II morphology, cf. (6):

(6) Nizán 'a' khwa tshung 'a' 'a-tlii/*tliik.
yesterday LOC village inside LOC 3SG-run.I/run.II
'Yesterday he ran into the village.'

As we will see below, however, there are other constraints on stem determination (specifically in nonsubject questions and relative clauses) which are sensitive to the presence of *any* nonsubject dependent, not just nominal ones.

3.2 Non-Ergative construction

The straightforward correlation between stem choice and transitivity status established so far faces an apparent counterexample. Notionally transitive predicates may also occur with stem I, in which case the ergative marker is obligatorily absent:

(7) a. Mangkio vok 'a-**tsoo**.
Mangkio pig 3SG-buy.I
'Mangkio bought a pig.'

b.*Mangkio **ni'** vok 'a-**tsoo**.
Mangkio ERG pig 3SG-buy.I

Following Peterson (1998:88) we will refer to such examples as "*non*-ergative constructions". This construction type raises the question of how it is different from transitive verbs occurring in the ordinary ergative construction. *Prima facie* there does not appear to be a clear truth-conditional meaning difference between the two.[3] In order to understand how the non-ergative construction differs from the

[3]Peterson (1998:88) suggests that transitive verbs occurring in the non-ergative construction require that the event not be completed, as for instance in the case of future tense. Thus, the distinction would reduce to an aspectual difference. Similarly, Henderson (1965:84) suggests that verbs occurring in "inconclusive sentences" in the closely related language Tiddim Chin exhibit "subjunctive mood", i.e., stem II, while "conclusive" ones display "indicative mood", i.e., stem I. However, the example in (7a) shows that lack of completion cannot be the determining factor since the non-ergative construction is indeed compatible with a past interpretation of the predicate.

ergative one, it is necessary to consider the discourse potential of each construction. If the context is such that a nonsubject dependent is topical, only the ergative construction is possible, as is shown in (8).

(8) a. Vok zayda' 'a-tsàng?
pig what 3SG-become
'What is happening to the pig?'

b. Mangkio$_{\mathbf{nontopic}}$ ni' 'a-**tsook**.
Mangkio ERG 3SG-buy.II
'Mangkio bought [it].'

c.*Mangkio 'a-**tsoo**.
Mangkio 3SG-buy.I

Topics may in fact be overtly marked by means of the discourse particle *khaa*; thus in the presence of an ergative marked subject, the object may by accompanied by *khaa*, as shown in (9):

(9) Mangkio ni' vok **khaa** 'a-**tsook**.
Mangkio ERG pig TOP 3SG-buy.II
'Mangkio bought a/the pig.'

On the other hand, in a context in which the subject of a sentence is understood as the topic of the preceding discourse, as in (10a), only the non-ergative construction is acceptable, as is illustrated in (10c).

(10) a. Mangkio ta'?
Mangkio Q
'What about Mangkio?'

b. Mangkio$_{\mathbf{topic}}$ vok 'a-**tsoo**.
Mangkio pig 3SG-buy.I
'Mangkio bought a pig.'

c.*Mangkio ni' vok 'a-**tsook**.
Mangkio ERG pig 3SG-buy.II

Further support for the topic status of the subject in such cases comes from the fact that subjects may optionally occur with the topic marker *khaa*, as illustrated in (11):

(11) Mangkio khaa vok 'a-**tsoo**.
Mangkio TOP pig 3SG-buy.I
'Mangkio bought a pig.'

The different discourse potential of subjects in non-ergative constructions is highly reminiscient of some of the effects displayed by antipassives in the world's languages. For instance, Cooreman (1994:68) argues that by backgrouding an O-argument, an antipassive allows for a lower degree of "referential continuity" for

the O-argument, which in turn makes the subject better suited to be linked to the discourse topic. Conversely, in an ergative construction, it is the O-argument which by default is linked to the discourse topic.

The analysis of non-ergative constructions as antipassive makes a number of interesting predictions that are borne out in Lai grammar.[4] As Peterson & VanBik (2001) point out, in conjoined sentences of the kind shown in (12), the interpretation of the pronominal element in the second clause depends on the ergative status of the preceding clause. If the latter is ergative (12a), the O-argument is topical in providing the referent for the pronominal object marker on the verb. Conversely, if the latter is non-ergative (12b), the subject is topical in providing the referent for the pronominal object marker:

(12) a. 'Aarpii ni' tii 'a-tiit 'ii ka-hmu'.
hen ERG egg 3SG-laid.II CONJ 1SG-see.II
'The hen laid an egg and I saw it (the egg/*the hen).'

b. 'Aarpii tii 'a-tii 'ii ka-hmu'.
hen egg 3SG-laid.I CONJ 1SG-see.II
'The hen laid an egg and I saw her (the hen/*the egg).'

As Peterson & VanBik (2001) further show, the difference in topicality is correlated with the construal in conjunction-reduction constructions of the kind familiar from Dixon's (1972) study of Dyirbal. Thus, in the ergative construction in (13a), the missing element in the second clause is construed with the O-element of the preceding clause, whereas in (13b), the non-ergative construction makes it possible for the subject of the first clause to identify the unexpressed argument of the second clause:

(13) a. Lawthlawpaa ni' ka-faa 'a-siik 'ii '-kal.
farmer ERG 1SG.POSS-child 'a-scold.II and.then 3SG-go.I
'The farmer scolded my child and then he (*the farmer/the child) left.'

b. Lawthlawpaa ka-faa 'a-sii 'ii '-kal.
farmer 1SG.POSS-child 'a-scold.I and.then 3SG-go.I
'The farmer scolded my child and then he (the farmer/*the child) left.'

In the terminology of Dixon (1979), we can say that the non-ergative construction feeds an S/O pivot in conjunction reduction constructions. We now turn to another example of such pivot-feeding behavior in the case of relative clause formation.

3.3 Ergativity and relative clause formation

If non-ergative constructions are considered antipassives, we also obtain a rather straightforward account of relative clauses.[5] Relative clauses in Lai are formed

[4] The idea of analyzing non-ergative constructions as instances of antipassive is first made in passing by Peterson (1998:88,n.3).

[5] An analysis along these lines was first suggested to us by David Perlmutter (p.c.).

by means of a relative marker such as *mii* which follows the clause-final verb. The noun to be relativized may either occur inside the relative clause or immediately following the relative marker. In the first case we obtain an internally headed relative clause (IHRC), whereas the second is an externally headed relative clause (EHRC).[6] For expository reasons, we only discuss internally headed relative clauses here.

In IHRC constructions the noun whose denotation is restricted by the relative clause also occurs within the clause providing that restriction. The major division in the syntax of IHRC is whether a subject or some other dependent is relativized. In the former case, the verb obligatorily occurs with stem I, both for intransitive (14a) and transitive (14b) predicates:

(14) a. [lawthlawpaa truang 'a' 'a-**'it/*'i'**] mii
farmer floor LOC 3SG-sleep.I/sleep.II REL
'the farmer who slept on the floor'

b. ['uitsow lawthlawpaa 'a-**that/*tha'**] mii
dog farmer 3SG-kill.I/kill.II REL
'the dog that killed the farmer'

Subjects of transitive predicates that are relativized cannot be accompanied by the ergative marker, hence the example in (15) is unacceptable:

(15) *['uitsow ni' lawthlawpaa 'a-**that**] mii
dog ERG farmer 3SG-kill.I REL

The opposite situation holds whenever a nonsubject dependent is relativized. Only stem II is possible now, as shown in (16):

(16) [lawthlawpaa ni' 'uitsow 'a-**tha'/*that**] mii
farmer ERG dog 3SG-kill.II/kill.I REL
'the dog that the farmer killed'

These facts fall into place if we assume that relativization is constrained by an S/O pivot; a situation that is familiar from relative clause formation, for instance in Dyirbal (Dixon 1972), Yidin^{y} (Dixon 1977), Greenlandic Eskimo (Woodbury 1977), and Mayan languages (England 1983). In the parlance of Cooreman (1994:74), it appears that the antipassive construction has been "co-opted" for strictly structural purposes. Given that the primary function of the non-ergative construction in Lai appears to be information structural by assigning topic status to the subject, it seems natural for the pivot in relative clause formation to include the topical elements, i.e., derived S, and O.

The data surveyed so far show that ergative/non-ergative status lies at the heart of the stem I vs. II distinction in Lai. If we consider the non-ergative construction

[6]The syntax of internally and externally headed relative clauses in Lai is further investigated in Kathol & VanBik 1999 and Kathol 2001.

an instance of antipassive, that is, as grammatically intransitive, a number of facts including relative clauses and topic-chaining constructions can be explained rather straightforwardly. However, stem choice is not wholly predictable on the basis of valence alone. A complicating factor is negation, to which we turn next.

3.4 Negation

Negation at the clausal level in Lai is expressed by means of the particle *low*. As the examples in (17) show, in negative environments of this kind, only stem I is permissible for both intransitive and transitive verbs:[7]

(17) a. Mangkio 'a-**tlii/*tliik** low.
Mangkio 3SG-run.I/run.II NEG
'Mangkio did not run.'

b. Mangkio ni' vok 'a-**tsoo/*tsook** low.
Mangkio ERG pig 3SG-buy.I/buy.II NEG
'Mangkio did not buy a/the pig.'

It is important to note that the occurrence of stem I with notionally transitive predicates in negated contexts is of a rather different nature than what we saw earlier in the non-ergative construction. While the non-ergative case never allowed for the subject to be marked ergatively, this is not so for negated clauses. As is illustrated in (17b), stem I is fully compatible with the ergative marker *ni'*. This strongly argues against analyzing stem I in negated clauses as another instance of antipassive. Supporting evidence for this conclusion comes from the observation that the presence/absence of the ergative marker is regulated by essentially the same conditions on the (non)topichood of the subject that we saw earlier in (10) and (16) as illustrated in (18–19):

(18) a. Vok zayda' 'a-tsàng?
pig what 3SG-become
'What about the pig?'

b. Mangkio$_{\mathbf{nontopic}}$ ni' 'a-**tsoo** low.
Mangkio ERG 3SG-buy.I NEG
'Mangkio did not buy [it].'

c.*Mangkio 'a-**tsoo** low.
Mangkio 3SG-buy.I NEG

(19) a. Mangkio zayda' 'a-tsàng?
Mangkio what 3SG-become
'What about Mangkio?'

[7]For the sake of brevity we only give translations with past tense interpretation whenever the future tense marker *laay* is absent. However, a nonpast interpretation is equally possible.

b. Mangkio$_{\textbf{topic}}$ vok 'a-**tsoo** low.
Mangkio pig 3SG-buy.I NEG
'Mangkio did not buy a pig.'

c.*Mangkio ni' vok 'a-**tsook** low.
Mangkio ERG pig 3SG-buy.II NEG

It therefore appears that the uniform occurrence as stem I "masks" the two modes of expression of transitive predicates. Hence the only diagnostic for the non-ergative construction in negated clauses is the absence of the ergative marker, but not the stem choice.
We next turn to conditions on determination involving constructional environments which in sense are "larger" than the verbal predicate and its polarity. Since the fact that the constraints are tied to properties of whole clauses, rather than individual elements, we will refer to these constraints as "construction-based"[8]

3.5 Construction-based constraints

Imperatives. Subjectless constructions with the imperative marker *tua'* require the presence of stem I. As before, the transitive/intransitive distinction does not play a role, cf. (20).

(20) a. **'It/*'i'** tua'!
sleep.I/sleep.II IMP
'Sleep!'

b. Tii **dìng/*dín** tua'!
water drink.I/drink.II IMP
'Drink the water!

To a certain degree, the uniform occurrence of stem I is not surprising here if the addressee of imperative statements is inherently construed as a topic, hence requiring transitive predicates to occur in the non-ergative construction with stem I.

Polar interrogatives. These also require that the verbs occur with stem I morphology. This is illustrated in (21).

(21) a. Mangkio 'a-**tlii/*tliik** ma?
Mangkio 3SG-run.I/run.II Q
'Did Mangkio run?'

b. Mangkio ni' vok 'a-**tsoo/*tsook** ma?
Mangkio ERG pig 3SG-buy.I/buy.II Q
'Did Mangkio buy a pig?'

[8]This is a slight abuse of terminology given that Construction Grammarians have always insisted on the ontological relatedness of words and larger units of syntactic organization as involving irreducible pairings of sound and meaning.

The occurrence of stem I is orthogonal to the ergative vs. non-ergative realization of notional transitive predicates. For instance, the following example, the object of the contination question in (22b) is construed as the discourse topic. Due to its nontopic status, the subject obligatorily occurs with the ergative marker, despite the presence of stem I:

(22) a. Vok ta'?
pig Q
'What about the pig?

b. Mangkio ni' 'a-tsoo ma?
Mangkio ERG 3SG-buy.I Q
'Did Mangkio buy it?'

c.*Mangkio 'a-tsoo ma?
Mangkio 3SG-buy.I Q

If the subject within the polar question is understood as topical, as in (23), the result is the exact opposite. Here, no ergative marker may be present, as shown in (23c):[9]

(23) a. Mangkio ta'?
Mangkio Q
'What about Mangkio?'

b. Mangkio vok 'a-tsoo ma?
Mangkio pig 3SG-buy.I Q
'Did Mangkio buy a/the pig?'

c.*Mangkio ni' vok 'a-tsoo ma?
Mangkio ERG pig 3SG-buy.I Q

Antecedents of conditionals. The last syntactic environment triggering stem I morphology throughout is antecedents of conditionals, as illustrated in (24).

(24) a. Mangkio **'it/*'i'** koo, ...
Mangkio sleep.I/sleep.II if
'If Mangkio slept, ... '

b. Mangkio ni' vok **tsoo/*tsook** koo, ...
Mangkio ERG pig buy.I/buy.II if
'If Mangkio bought a pig, ... '

This environment is particularly interesting given that (adverbial) subordinate clauses in general in fact display the opposite behavior, i.e., they lead to the uniform choice of stem II morphology, as discussed in the next section.

[9]Examples such as (23b) are of course slightly artificial in the sense that an overt repetition of a topic gives rise to stylistic akwardness. Nevertheless, this awkwardness is in clear contrast to the type of unacceptablity that arises from the infelicitous use of the ergative marker in (23c).

3.5.1 Uniform stem II environments

Stem neutralizations may also occur in the opposite direction, i.e., in favor of stem II. There are two main environments in which have this property.

Adverbial subordinate clauses. The first such set of environments are (adverbial) subordinate clauses of various kinds (cf. also (2b) above). This is illustrated here with the temporal adverbial clauses in (25).

(25) a. Mangkio 'a-**'i'/*'it** tik-'a', ...
Mangkio 3SG-sleep.II/sleep.I when
'When Mangkio slept, ... '

b. Mangkio ni' vok 'a-**tsook/*tsoo** tik-'a', ...
Mangkio ERG pig 3SG-buy.II/buy.I when
'When Mangkio bought the pig, ... '

The uniform occurrence of stem II in subordinate adverbial clauses again suggests that the morphology is no longer indicative of whether a notional transitive predicate occurs in the ergative or non-ergative construction. This means that subjects of transitive adverbial subordinate clauses should occur with or without ergative marker depending on whether they have nontopic or topic status, respectively. This is precisely what we find. As Peterson & VanBik (2001) observe, the presence/absence of the ergative marker has precisely the same effect on possible anaphoric dependencies that was noted earlier in (12). Thus, despite the uniform stem II morphology, only phrases with absolutive status are topical and thus provide eligible antecedents for the understood object pronoun in (26).

(26) a. [Lawthlawpaa ni' ka-zaal 'a-ba' tik-'a'] ka-hmu'.
farmer ERG 1SG.POSS-bag 'a-hang.II when 1SG-see.II
'When the farmer hung up my bag, I saw it (the bag/*the farmer).'

b. [Lawthlawpaa ka-zaal 'a-ba' tik-'a'] ka-hmu'.
farmer 1SG.POSS-bag 'a-hang.II when 1SG-see.II
'When the farmer hung up my bag, I saw him (the farmer/*the bag).'

There is some evidence that uniform choice of stem II is a constructional feature of grammatically subordinate environments in general. Thus, certain constructions that have nonfinite complement clause equivalents in languages with finite vs. nonfinite inflectional morphology also call for stem II lin Lai. One instance is complements of verbs of perception such as *hmú/hmu'* ('see'), as shown in (27):

(27) a. Lawthlawpaa 'a-**'i'/*'it** ka-hmu'.
farmer 3SG-sleep.II/sleep.I 1SG-see.II
'I saw the farmer sleep.'

b. Lawthlawpaa vok 'a-**tsook/*tsoo** ka-hmu'.
farmer pig 3SG-buy.II/buy.I 1SG-see.II
'I saw the farmer buy a pig'

Subordinate environments of this kind are typically closely connected to nominalizations. The fact that such constructions exhibit stem II morphology thus may lend support to the idea advanced by Peterson (1998:88) that the use of stem II in ergative constructions is historically derived via reanalysis from a nominalizing function.[10]

Nonsubject content questions. Constituent questions involving nonsubject dependents also require uniformity of verbal morphology, regardless of the transitive/ergative status of the verb involved. Neutralization to stem II applies in the case of argument questions, as in (28), as well as in adverbial questions as in (29).

(28) a. Mangkio ni' zei da' 'a-**dín/*dìng**?
Mangkio ERG what 3SG-drink.II/drink.I
'What did Mangkio drink?'

b. Mangkio ni' zei vok da' 'a-**tsook/*tsoo**?
Mangkio ERG which pig 3SG-buy.II/buy.I
'Which pig did Mangkio buy?'

(29) a. Zei tik 'a' da' Mangkio 'a-**'i'/*'it**?
when Mangkio 3SG-sleep.II/sleep.I
'When did Mangkio sleep?'

b. Zei tik 'a' da' Mangkio ni' vok 'a-**tsook/*tsoo**?
when Mangkio ERG pig 3SG-buy.II/buy.I
'When did Mangkio buy a/the pig?'

It is worth pointing out that stem choice is not fully predictable in the case of adverbial dependents of intransitive predicates, cf. (29a) above. That is, the occurrence of stem II is not patterned on an independently existing construction that licenses stem II occurrences of intransitive predicates.[11] For that reason, we will regard nonsubject questions as a separate construction type for the purposes of stem determination.[12]

3.5.2 Variable environments, again

Subject questions. While stem choice is uniform in nonsubject questions, it is variable in subject questions. The latter environmnents are thus similar to declarative affirmative root clauses and relative clauses in not imposing a uniform constraint on stem choice. Moreover, the conditions on stem choice appear very

[10] See also Comrie (1978:376) on this point.

[11] The same holds also for relativized adverbial dependents, which uniformly require stem II, independent of the head valence.

[12] As Jim Blevins (p.c.) has pointed out to us, nonsubject questions can be seen as a natural class if they are all given a dislocation analysis. However, given that some nonsubject questions involve in-situ orders (cf. (28)), it is not clear to us how viable such an approach ultimately would be.

closely tied to transitivity/ergativity. Subject questions formed from intransitive predicates exhibit stem I morphology, as is shown in (30):

(30) 'a-how da' 'a-**'it/*'i'**?
who 3SG-sleep.I/sleep.II
'Who slept?'

Subject questions formed from transitive predicates in principle allow for occurrence of either stem I or II. In the first case, we again have an instance of a non-ergative construction. Subject questions of this kind tend to occur if the subject has already been introduced in the previous discourse and hence bears some degree of topicality. For instance in the following pair of sentences, the question in (31b) serves to obtain a more detailed account of a particular person among the previously mentioned people—specifically the one who helped Mangkio.

(31) a. Mii-zey-moo ni' Nihu le Manngkio 'an-bom'-hnaa.
some people ERG Nihu and Mangkio 3PL-help.II-3PL
'Some people helped Nihu and Mangkio.'

b. 'a-how da' Manngkio 'a-**bóóm**?
who Mangkio 3SG-help.I
'Who (among them) helped Mangkio?'

Conversely, it is also possible to ask a subject question in a context in which an element other than the subject is high in topic status. In the example in (32), Mangkio is explicitly introduced as the topic of discourse leading up to the subject question in (32b). As a result, the question occurs with stem II and ergative marker:

(32) a. Mangkio ta'?
Mangkio Q
'What about Mangkio?'

b. 'a-how ni' da' (Manngkio) 'a-**bom'**?
who Mangkio 3SG-help.II
'Who helped Mangkio?'

The above examples show that in the case of subject questions, the status of the questioned phrase as a focus must be seen as decoupled from the issue of which element is construed as topical with respect to the distinction between ergative/non-ergative constructions.

3.5.3 Summary

The findings so far can be summarized in the schematic representation in (33). Here, the different syntactic environments are listed, together with the realization possibilities for morphology and the ergative marker for intransitive and transitive predicates.

(33)

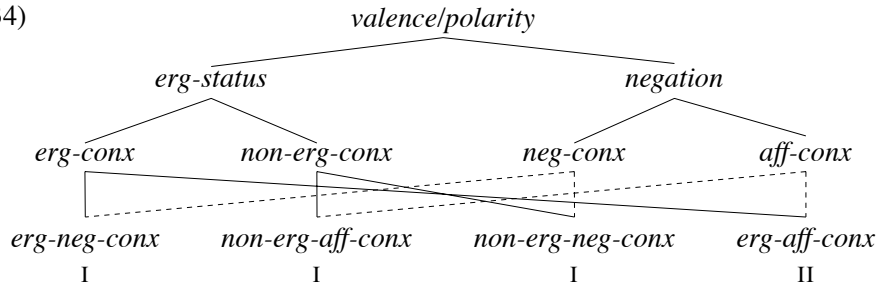
	intransitive	transitive	
		non-ergative	ergative
unmarked	I	I	II, ni'
subj Q	I	I	II, ni'
subj. Rel.	I	I	N/A
imperative	I	I	N/A(?)
negation	I	I	I, ni'
polarity Q	I	I	I, ni'
if-clause	I	I	I, ni'
nonsubj Q	II	II	II, ni'
nonsubj. Rel.	II	N/A	II, ni'
adv. subord	II	II	II, ni'

Whenever a row contains a "N/A" entry, it means that the construction in question is not possible in that syntactic environment. This is clearly the case, as we argued above, for subject relative clauses in that an A-argument would not fit the S/O pivot operative in relativization. We similarly suggested that the uniform choice of stem I in imperative constructions could be seen as due to the obligatory topic status of the understood subject. Conversely, the unavailability of the non-ergative construction in nonsubject relative clauses can be explained along very similar lines. This means, however, that there is a residue of environments—in particular polarity questions, negation and adverbial clauses—in which stem choice is not (synchronically) connected to ergativity. These are thus environments where morphological expression is entirely conditioned by the constructional environment.

4 Stem determination via cooperating constructions

In this section we will present an analysis of Lai stem choice which mirrors the presentation of the data above. That is, we will assume that valence and polarity give rise to default constraints which can be "overridden" in particular constructional environments. These default constraints are based on the hierarchy of constructions shown in (34). The basic idea is that the properties of constructions of interest arise from a cross-classification of valence properties (i.e., ergativity status) and polarity (i.e., whether or not the predicate is negated).

(34)



Also listed in the hierarchy is the stem choice associated with each of the four constructional types. Since only one of the four constructions (*erg-aff-conx*) is associated with stem II, it is natural to assume that within the hierarchy in (34), I is the default value for VFORM of the topmost type (*valence/polarity*), as implemented by the constraint in (35a). Ergative affirmative contexts are associated with a conflicting constraint, as shown in (35b) and thus override the stem choice specification inherited from their supertype.

(35) a. *valence/polarity* $\rightarrow \left[\ldots | \textsc{vform} \ /i \right]$

b. *erg-aff-conx* $\rightarrow \left[\ldots | \textsc{vform} \ /ii \right]$

The reason why the constraint in (35b) is also soft will become clear soon, when we consider how these constraints interact with clause-level constructional constraints.

It may be helpful to turn our attention to the (partial) description of a few lexical items. As is shown in (35–36), the lexicon matches particular morphological forms with the syntactic status of that form as with stem I or stem II for both intransitive and transitive verbs.

(36) a. *'it* 'sleep'

$$\begin{bmatrix} \ldots \mid \textsc{arg-st} & \langle \textsc{np} \rangle \\ \ldots \mid \textsc{vform} & i \end{bmatrix}$$

b. *'i'* 'sleep'

$$\begin{bmatrix} \ldots \mid \textsc{arg-st} & \langle \textsc{np} \rangle \\ \ldots \mid \textsc{vform} & ii \end{bmatrix}$$

(37) a. *tsoo* 'buy'

$$\begin{bmatrix} \ldots \mid \textsc{arg-st} & \langle \textsc{np}, \textsc{np} \rangle \\ \ldots \mid \textsc{vform} & i \end{bmatrix}$$

b. *tsook* 'buy'

$$\begin{bmatrix} \ldots \mid \textsc{arg-st} & \langle \textsc{np}, \textsc{np} \rangle \\ \ldots \mid \textsc{vform} & ii \end{bmatrix}$$

What is not determined lexically, however, is information on the case marking of the various verbal dependents. As a result, the case marking properties can be determined directly by the construction that a given verb occurs in, as shown in (38)

(38) a. *valence/polarity* $\rightarrow \left[\ldots \mid \textsc{arg-st} \ / \langle \textsc{np}[\textsc{abs}] \rangle \oplus listof(\neg \textsc{np}[\textsc{erg}]) \right]$

b. *erg-conx* $\rightarrow \left[\ldots \mid \textsc{arg-st} \ \langle \textsc{np}[\textsc{erg}], \textsc{np} \rangle \right]$

For the base cases we considered above, this means that, by default, a verb occurring in any subtype of the *valence/polarity* Construction, will have an absolutive subject. Ergative constructions, both affirmative and negated, take ergative subjects. As before with the stem form, this state of affairs can be captured naturally by associating a default constraint with the supertype and assuming an overriding constraint for the "exceptional" subtype, that is, ergative constructions. In our analysis, a non-ergative (antipassive) constructions simply arises from a transitive verb occurring within a *non-erg-conx*, whose case marking behavior is inherited from *valence/polarity*.

4.1 Interaction between lexical and constructional information

As the discussion in the preceding sections showed, particular constructional environments override the stem choice constraints imposed by valence and polarity. This raises the issue of this interaction of conflicting constraints is properly implemented. Based on the constructional feature idea (INV) commonly used for the interaction between inversion contexts and choice of copular form in English mentioned above, one possibility would be to decompose each relevant environment as a particular combination of binary feature values. As the example in (39) illustrates, negation in environments that are not adverbial clauses trigger stem I:

(39) $\begin{bmatrix} \text{POLAR} & - \\ \text{ADV-CLAUSE} & - \\ \text{NEG} & + \end{bmatrix} \rightarrow \left[\ldots \mid \text{VFORM} \ i \right]$

The disadvantage of such an approach is that separate binary features are needed to encode each constructional environment, together with a battery of value combinations that define the triggering environments for each value setting. Moreover, these combinations of feature–value pairs obscure the default/override relationships among the various conditions.

The alternative approach pursued here is to use the type system as a repository of constructional possibilities and let stem determination be driven by the interplay between "soft" default constraints and "hard" non-default constraints.

Beginning with polar interrogatives and adverbial subordinate clauses, the constraints in (40) straightforwardly capture the fact that the former always exhibit stem I morphology while the latter always contain a stem II predicate.

(40) a. $\textit{polar} \rightarrow \left[\ldots \mid \text{VFORM} \ i \right]$

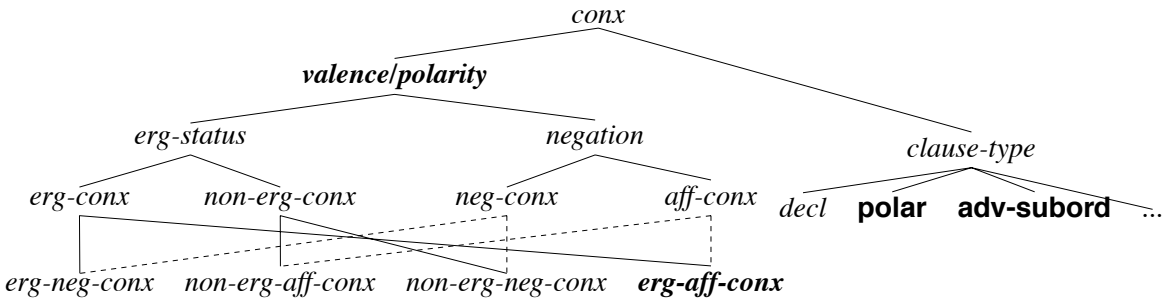
b. $\textit{adv-subord} \rightarrow \left[\ldots \mid \text{VFORM} \ ii \right]$

Defined as hard constraints, these will win out over any conditions stemming from the valence/polarity set in (38) above. For instance, a ergative polar question displays stem I morphology because the stem II requirement in (38b) is trumped by the constraint in (40a). The interaction between the various constraints is made possible by the fact that the constructional types in (38b) do not classify verbs, but instead the clausal constructions in which the verbs occur.[13] If we combine the hierarchy in (34) with a partial hierarchy of additional constructional possibilities, we obtain a multiple inheritance hierarchy which is partially shown in (41). The actual space of constructions (e.g., *decl-erg-neg-conx*) arises as the cross-product

[13]This potentially raises issues having to do with syntactic locality. Note, in particular, that the constraints in (38) make reference to the ARG-ST values of clausal constructions. This is at odds with the wide-spread assumption within HPSG that ARG-ST information is not projected from the lexical level (e.g., Sag *et al*. 2003). The current proposal builds on arguments provided in Kathol 2003 in favor of projecting ARG-ST information. Alternatively, it may be sufficient for the constraints in question to only access subject information, which would be in accordance with recent evidence in favor of projecting subject information to the clause level.

of the *clause-type* and *valence/polarity* leaf types, by virtue of on-line type construction of the kind proposed in Koenig 1999.

(41) **Partial constructional hierarchy**



For ease of exposition, the hierarchy in (41) distinguishes graphically type antecedents for **soft constraints** and **hard constraints**. For instance, the stem choice for a *polar-erg-aff-conx* results from the soft constraint associated with *valence/polarity*, which is overridden by the soft constraint originating with *erg-aff-conx*, which in turn is trumped by the inviolable constraint associated with *polar* constructions. It also becomes apparent that declarative clauses do not exhibit any intrinsic stem determination behavior of their own. As a result, the only constraints that are relevant to them are based on valence/polarity properties.

As Malouf (forthcoming) points out, constraints that are organized according to their specificity within a type hierarchy, together with defaults and overrides (which he refers to as "cooperating construction"), make it possible to capture some of the same intuitions that lead to Optimality Theory as a framework for the interaction of violable constraints. One crucial difference, however, is that OT constraints operate at the utterance level itself; that is, these constraints are directly brought to bear to determine the well-formedness of a given utterance candidate, in relation to potentially better suited candidates. In contrast, constraint interaction by means of type hierarchies occurs at the level of grammatical description, i.e., it defines the constructional inventory. As a result, the process of selecting candidates, drawn from a potentially infinite set, is sidestepped altogether.

5 Concluding remarks

The Lai data presented here provide no (convincing) evidence for a simple synchronic form–function relationship between stems and their syntactic/semantic/pragmatic environment of occurrence. Instead, a fully satisfactory account of why the distribution of stems is the way it is will inevitably have to take diachronic factors into account, such as the development of ergativity.

If the proposed analysis of the synchronic facts is on the right track, it suggests that the same set of morphological distinctions on a head may serve a number of different purposes, not only to express intrinsic properties of that head but also

to mark the larger construction within which the lexical element occurs. This is reminiscent of cases in which the morphosyntax of a dependent element is determined nonlocally, in particular with respect to case marking. For instance, Börjars & Vincent (2000) cite data such as (42) from Classical Armenian showing that it is possible for phrases no occur with the locally appropriate case (genitive), but rather take on the case marking of the larger containing construction (ablative).

(42) a. i knoj-ê t'agawor-i-n
by wife-ABL.SG king-GEN.SG-DEF
'by the king's wife'

b. i knoj-ê t'agawor-ē-n
by wife-ABL.SG king-ABL.SG-DEF
'by the king's wife'

Malouf's (2000) approach to such phenomena suggests that there is no strict limit to the structural distance between the triggering head and the exceptionally marked dependent. This fact sets such cases apart from the situation considered here, which is strictly confined to the domain of a single clause. We will leave it for further research to determine whether, despite appearances, nonlocal determination of morphosyntactic properties of dependent has enough properties in common with nonlocal effects on head morphology to warrant a more unified treatment than is currently available.

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