

Agreeing How?

*Implications for theories of agreement and locality**

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1. Introduction

1.1 The empirical issue

In some varieties of Luyia (narrow Bantu, J.30), the *wh*-word ‘how’ agrees in person, number, and noun class with the subject of its clause. We illustrate with data from Lusaamia (Uganda/Western Kenya) and Lubukusu (Western Kenya):^{1,2}

- (1) a. Ny-emba en-die? b. W-emba o-tie? [Lusaamia]
1sgSA-sing 1sg-how 2sgSA-sing 2sg-how
‘How do I sing?’ ‘How do you sing?’
- c. Y-emba a-tie? d. Khw-emba khu-tie?
3sgSA-sing 3sg-how 1plSA-sing 1pl-how
‘How does s/he sing?’ ‘How do we sing?’
- e. Ki-mi-saala ki-a-kw-ile ki-rie(na)? [Lubukusu]
4-4-tree 4SA-PST-fall-PST 4-how
‘How did the trees fall?’
- f. Si-tanda si-funikhe si-rie(na)?
7bed 7SA-broke 7-how
‘How did the bed break?’

In this paper we provide a description and analysis of the distribution and properties of Luyia agreeing ‘how’, based mainly on data from Lubukusu. We show that agreement on ‘how’ is usually but not always identical to subject agreement (SA), diverging crucially in the features it exhibits in certain locative inversion and subject extraction contexts. The contrasts argue that ‘how’ has an agreement relationship with the subject independent of the relation which yields agreement on the verb. We analyze agreeing ‘how’ as an XP adjunct to vP and demonstrate that only a downward-probing Agree analysis (Chomsky 2000, 2001) captures all of the

'how' agreement facts. This runs counter to proposals in Baker (2008) and Diercks (2011a) that agreement in most Bantu languages involves systematic upwards probing as a matter of cross-linguistic parametric choice. The facts of agreeing 'how' also argue against the view that agreement always spells out a Spec-head relation as in Koopman (2000, 2006). They are incompatible with the claim in Chomsky (2007, 2008) that all probe features are introduced on phase heads and surface on phase head complements, and they run counter to the common assumption that only heads can probe. Following Epstein & Seely (2006), Boskovic (2007, 2011), and Carstens (2012), we argue that unvalued uF of X can probe XP's c-command domain.

Traditionally, agreement has often been viewed as a reflex of the relationship between a predicate and its arguments, or a head and its modifiers. In Minimalism, the parties participating in an agreement relationship are instead determined largely through syntactic architecture and locality. Agreeing 'how' strongly supports the latter approach.

1.2 Structure of the paper

This paper consists of eight major sections. In the next subpart of the introduction we provide a summary of our theoretical assumptions. §2 describes the properties and distribution of agreeing 'how,' lays out several potential approaches, and gives a preliminary sketch of the analysis that this paper will argue for. §3 addresses two of the potential alternative accounts and shows how they fail. §4 presents some crucial diagnostic evidence relating to non-canonical subjects: inverted locatives and subject operators. Based in large part on these facts, §5 develops the analysis of

agreeing 'how' as a downward-probing vP-adjunct, showing that 'how' must have independent uPhi that agree with the subject in its base position. §5 also argues against an analysis of 'how's agreement as arising through control of a *pro* subject within an interrogative predicate phrase headed by 'how.' §6 lays out the reasons why upwards-probing, Spec, head agreement, and the Feature Inheritance theory of Chomsky (2007, 2008) and Richards (2007) fail to explain the properties of 'how', and sketches out a theory of agreement compatible with the facts. §6 also presents the argument that agreeing 'how' is one among many cases in grammar where unvalued uPhi of X can probe XP's c-command domain. §7 explores some apparent locality paradoxes connected with the analysis of 'how' including so-called A' opacity, based on the ability of the locative to move across the thematic subject and vice versa. §8 summarizes and concludes.

1.3 Theoretical assumptions.

This paper is written within the Minimalist theoretical framework of Chomsky (2000; 2001). In particular, we assume that syntactic objects are constructed from bottom to top by the Merge operation, and that there is cyclic Transfer to the Conceptual-Intentional (C-I) and Sensory Motor interfaces (henceforth PF). We follow Chomsky (op cit) in taking Transfer to occur when a phase head v^* or C is merged. We also assume with Chomsky (op cit) that agreement and Case are uninterpretable, unvalued features (uFs); uPhi and uCase respectively. When uPhi is merged on some category α , it immediately *probes* its c-command domain to find a *goal* β -- an expression that can provide values for α 's unvalued features. We assume

the “activity requirement” – that a goal must have a uF itself. In Indo-European A-relations, the feature satisfying this requirement is usually a DP’s uCase.

As noted in §1.1, we depart from more recent Minimalist ideas in several significant respects. Chomsky (2007, 2008) proposes that agreement is universally restricted to one occurrence per phase, for reasons rooted in the Conceptual-Intentional interface. The data in (1) are a preliminary indicator of the difficulties that Bantu languages raise in connection with this view, particularly given evidence to be presented in §4 that agreement on ‘how’ is independent of subject agreement on the verb. We argue for a principled and predictive account of the differences between English agreement and agreement in Bantu languages in §6.5. On specific problems that ‘how’ raises for Chomsky (2007, 2008) see §6.4.

2. Overview of agreeing ‘how’

2.1 Introduction

Despite its novelty from a cross-linguistic standpoint, agreeing ‘how’ is unremarkable in many language-internal respects, sharing several key properties with other Luyia *wh*-phrases.³ This section describes the morphosyntactic properties of agreeing ‘how’ with a focus on Lubukusu, and presents a brief preview of our analysis in §2.8.

2.2 Long and short forms

All *wh* apart from *naanu* ‘who’ have both short and long forms in Lubukusu, the long forms bearing the suffix *-na*. Long forms are obligatory when a *wh*-phrase is clefted, a fact that Justine Sikuku (personal communication) suggests is because clefted

material is emphasized and the short forms cannot bear emphasis (see §2.7 for discussion and examples of clefts). The suffix is optional in all non-emphatic contexts that we are aware of. What is important for our purposes is not the nature or function of the suffixes but rather that ‘how’ patterns with the other *wh*-phrases in this respect (see (2)).

- (2) a. sii(na) ‘what’
 b. lii(na) ‘when’
 c. waa(ena) ‘where’
 d. -rie(na) ‘how’
 e. -rie(na) ‘what kind/size/quantity’ (see §2.5 and §3)
 f. sikila sii(na) ‘why’

2.3 Two locations

Although agreeing ‘how’ is usually clause final, like other non-subject *wh*-phrases in many Bantu languages it has an alternate position immediately after the verb:

- (3) Ng’wa e-kahawa **en-die** / Ng’wa **en-die** ekahawa? [Lusaamia]
 1sgSA-drink 9-coffee 1sg-how/1sgSA-drink 1sg-how 9-coffee
 ‘How do I drink coffee?’ (Subject)>verb>WH>OB or (Subject)>verb>OB>WH

Similarly, if a verb has a clausal complement, ‘how’ can either precede or follow it.

- (4) a. W-a-ul-ile **o-rie(na)** [oli ba-ba-ana b-oola]? [Lubukusu]
 2sgSA-PST-hear-PST 2sg-how that 2-2-children 2SA-arrived
 ‘How did you hear that the children arrived?’
 b. W-a-ul-ile [oli ba-ba-ana b-oola] **o-rie(na)**?
 2sgSA- PST-hear-PST that 2-2-children 2SA-arrived 2sg-how
 ‘How did you hear that the children arrived?’

The fact that agreeing ‘how’ has access to the immediate post-verbal positions aligns it with other Luyia *wh*-phrases. (5) and (6) illustrate the same alternation between final and immediately post-verbal positions for ‘where’ and ‘when.’

- (5) a. Ba-ba-ana ba-a-nyola chi-lomo **waae(na)**? (Wasike 2007: 356)
 2-2-children 2SA-PST-receive 10-report where
 ‘Where did the children receive information?’

b. Ba-ba-ana ba-a-nyola **waae(na)** chi-lomo?
 2-2-children 2SA-PST-receive where 10-report
 ‘Where did the children receive information?’

(6) a. Ba-ba-ana ba-a-nyola chi-lomo **lii(na)**?
 2-2-children 2SA-PST-receive 10-report when
 ‘When did the children receive information?’

b. Ba-ba-ana ba-a-nyola **lii(na)** chi-lomo?
 2-2-children 2SA-PST-receive when 10-report
 ‘When did the children receive information?’

The alternative position poses intriguing syntactic questions, but it is available to all non-subject *wh*-phrases; not to ‘how’ alone. Since the focus of this paper is the special properties of agreeing ‘how’ we will not explore this alternation here, and henceforth restrict examples to final ‘how.’⁴

2.4 ‘How’ agreement correlates with scope

‘How’s agreement features can serve to disambiguate its scope. (7a,b) are otherwise identical, but agreement suffices to distinguish two possible interpretations.

(7) a. Ba-ba-ana ba-hulil-a mbo Wafula e-eba si-tabu **ba**-rie(ena)?
 2-2-children 2SA-hear-FV that 1Waf. 3sgSA-stole 7-book 2-how
 ‘[How did children hear] that Wafula stole a book? [Lubukusu]

b. Ba-ba-ana ba-a-hulil-a mbo Wafula e-eba si-tabu **a**-rie(ena)?
 2-2-children 2SA-PST-hear-FV that 1Waf. 3sgSA-stole 7-book 3sg-how
 ‘The children heard that [Wafula stole a book by what means]?’

‘How’s scope is ambiguous if it follows clauses whose subjects have identical phi-features:⁵

(8) Nafula a-a-hulil-a mbo Wafula e-eba si-tabu a-rie(ena)?
 1Naf. 3sgSA-PST-hear that 1Waf. 3sgSA-stole 7-book 3sg-how
 a. [How did Nafula hear] that Wafula stole a book? *Main clause construal*
 b. Nafula heard that [Wafula stole a book how]? *Lower clause construal*

‘How’ located in the main clause cannot have lower clause construal, or agree with an embedded subject. In (9), though the subject of each clause is third person

singular and ‘how’ is marked third person singular, its scope can only be matrix clause. In (10), the two subjects have different phi-features and ‘how’ is located in the matrix clause agreeing with the embedded subject. The result is simply unacceptable.

(9) Nafula a-a-hulil-a **a-rie(na)** mbo Wafula e-eba si-tabu?
1Naf. 3sgSA-PST-hear-FV 3sg-how that 1Waf. 3sgSA-stole 7-book
OK: ‘[How did Nafula hear] that Wafula stole the book?’
#‘Nafula heard that [Wafula stole the book by what means]?’

(10) *W-a-hul-ile **ba-rie(na)** mbo ba-ba-ana b-oola?
2Sg-hear-PST 2-how that 2-2child 2SA-arrived
‘How did you hear that the children arrived?’

2.5 A *wh*-adnominal homophone

Agreeing ‘how’ has a *wh*-adnominal homophone usually translated as “what kind?” (see (11) and (12)). The homophone also lacks intrinsic phi-features, instead acquiring phi-values through agreement (see §3 for discussion on this point).

(11) Ka-ma-ki **ka-rie** ka-katikh-e?
6-6-egg 6-how 6SA-break-PST
‘What kind of eggs broke?’

(12) Ku-mu-nyu **ku-rie** ku-kho-kuya?
3-3-soup 3-how 3SA-PRES-cook
‘What kind of soup is cooking?’

It seems unlikely that the identity between agreeing ‘how’ and ‘what kind’ is accidental. In fact, question words meaning ‘how’ and ‘what kind’ are also homophonous in Polish, German, and Russian, as are the adverbial modifier ‘thus’ and adnominal ‘such’. Based on these similarities Landman & Morzycki (2003) argue that the two types of expressions are parallel in that adverbials denote kinds of events, while adnominals denote kinds of individuals. Landman & Morzycki

propose that ‘thus’ and ‘such’ are functionally identical in being kind-anaphoric: the adverbial, manner modifier ‘thus’ in a sentence like *She danced thus* is anaphoric to a contextually salient kind of events, in their view, whereas the ‘such’ adnominal modifier in an expression like *such a dog* is anaphoric to kinds of individuals. ‘How’ and ‘what kind’ can be viewed as the *wh*-counterparts to these two parallel kind-anaphors. Landman & Morzycki’s analysis explains why an identical *wh*-modifier can be used both adnominally and adverbially in the languages they examine. We assume that the approach can be extended to explain the dual uses of Lubukusu’s agreeing *-rie* in adnominal and adverbial *wh*-questions.⁶

2.6 Phi-features of *wh*-operators: why does ‘how’ agree?

A natural question about *-rie(na)* ‘how’ is why it must agree. Most expressions in narrow Bantu languages either have intrinsic phi-features or acquire them in the form of agreement (for discussion and references on the latter issue see §6.5). But most Luyia *wh*-words differ from ‘how’ and ‘what kind’ in being lexically specified for noun class.

- | | | | | |
|------|---------|---------------------------------------|----------|----------------------------|
| (13) | a. who | <i>naanu</i> (class 1/2) | b. what | <i>sii(na)</i> (class 7) |
| | c. when | <i>lii(na)</i> (class 11) | d. where | <i>waa(ena)</i> (class 16) |
| | e. why | <i>sikila sii(na)</i> (7reason 7what) | | |

An explanation for this difference between ‘how/what kind’ on the one hand and ‘who,’ ‘what,’ and ‘where,’ on the other is readily available in the fact that answers to the latter name an individual or location -- items that, following Chomsky’s (1981) categorical typology, are typically [+N]. All nominal expressions have intrinsic phi-features in Bantu languages; and it is in keeping with this generalization that *wh*-

words have noun class features like those of their canonical answer types ('who' is answered with nouns referring to humans so is Class 1/2, etc). Answers to 'when' questions are usually nominal expressions like "today" or "last week"; hence the corresponding question word is [+N] and has class features. Reason questions are expressed with the complex *wh*-phrase *sikila siina* 'reason what' (13e), class 7 by nature of *sikila* and *siina*'s class 7 membership. The fact that manner adverbs, adjectives, and their *wh*-counterparts 'how' and 'what kind' are non-nominal and lack noun class features is likely attributable to the relationship of these expressions to kinds rather than entities or individuals (see §2.5), and perhaps to the fact that manners and the like are less countable than entities, individuals, or even reasons.

Summing up, most *wh*-phrases are entity-oriented [+N] expressions so they have class features; on the other hand manner and adnominal adjuncts are kind-oriented and hence non-nominal. Their lack of intrinsic phi-features is therefore not surprising. Though this does not predict that they will *have* to agree,⁷ it opens up the possibility for them to do so, and Lubukusu and Lusaamia exploit this possibility. 2.7

Clefting *wh*-phrases: only 'how' cannot cleft

One other point of contrast between 'how' and other Lubukusu *wh*-phrases is that only 'how' cannot cleft. Following Wasike (2007), we propose below that this is a direct consequence of the fact that its phi-features are not intrinsic, but the result of agreement.⁸

Wasike (2007: 361-362) shows that most *wh*-phrases in Lubukusu can appear left-peripherally in cleft constructions as an alternate to surfacing in situ.

Clefts involve an agreeing complementizer, as shown in (14a,b) for *siina* ‘what’ and *waaena* ‘when’.⁹

- (14) a. Si-a-ba **siina** ni-syo Nangila a-a-tekh-el-a Wafula?
 7-PST-be 7what COMP-7 3sgNangila 3sgSA-PST-cook-APPL-FV 1Wafula
 ‘What did Nangila cook for Wafula?’
- b. A-li **waaena** ni-o Nafula a-kha-ch-a?
 16-be 16where COMP-16 1Nafula 3sgSA-PRES-go-FV
 ‘Where is it that Nafula is going?’

‘How’ cannot be clefted, however, whether agreement on the cleft is class 1 to match the features of the subject that ‘how’ agrees with or default class 16 (15b). Wasike also notes that manner adverbs cannot be clefted either (15c); nor can prepositional phrases (15d).

- (15) a. Nafula a-kha-kenda a-rie(na)?
 1Nafula 3sgSA-PRES-walk 3sg-how
 ‘How is Nafula walking?’ *in situ ‘how’*
- b. *A-li **a-riena** ni-ye/-o Nafula a-kha-kenda?
 3sg-be 3sg-how COMP-3sg/16 1Nafula 3sgSA-PRES-walk
 ‘How is it that Nafula is walking?’ **clefted ‘how’*
- c. *Bu-li **bwaangu** ni-bwo/-o Wafula a-a-nywa ka-ma-lwa.
 14-be quickly COMP-14/16 1Wafula 1SA-PST-drink 6-6-beer
 ‘It is quickly that Wafula drank beer.’ **clefted adverbial*
- d. *A-li **ne Nekesa** ni-ye/-o Wekesa a-a-lomaloma.
 3sg/16-bewith 1Nekesa COMP-1/16 1Wekesa 1SA-PST-speak
 ‘It is with Nekesa that Wekesa spoke.’ **clefted PP*

Wasike proposes that only expressions with interpretable phi-features can be clefted in Lubukusu. Following Carstens (2010, 2011) and Boskovic (to appear), we analyze the grammatical gender features of nouns as valued but uninterpretable; we also assume with Carstens (1991) that Bantu noun class is a composite of gender and number features (see note 1). We accordingly adopt a modified version of

Wasike's proposal under which only expressions with intrinsic phi-features can be clefted in Lubukusu. This we take to be a consequence of the broader claim in (16), adapted from Carstens (2010a) (here and henceforth iPhi = intrinsic phi-features).¹⁰

(16) **No Agree with agreement:** Only iPhi can value uPhi.

Carstens proposes (16) based on the fact that Romance determiners agree with nouns in gender, but when uPhi of Romance T probes DP it does not acquire a gender value from the gender agreement on D. Carstens argues that SA on T only includes gender features in languages where N systematically adjoins to D. This morphological amalgamation leads D(P) to inherit N's gender feature, and gender is therefore accessible to value uPhi of T (see §6.5 for details). Carstens suggests that (16) is due to the fact that agreement/Case values are context-sensitive information as to how a uF should be pronounced in a particular location, but the rationale is not crucial here. What is important is that (16) predicts the inability of 'how' to cleft, since Lubukusu clefts must agree with the clefted expression.

As our exploration of 'how' proceeds, it will become clear that T probes the subject in its base position, ignoring valued uPhi on 'how'. In addition to accounting for the inability of 'how' to cleft, (16) explains why 'how' does not intervene to block Agree (T, SU).

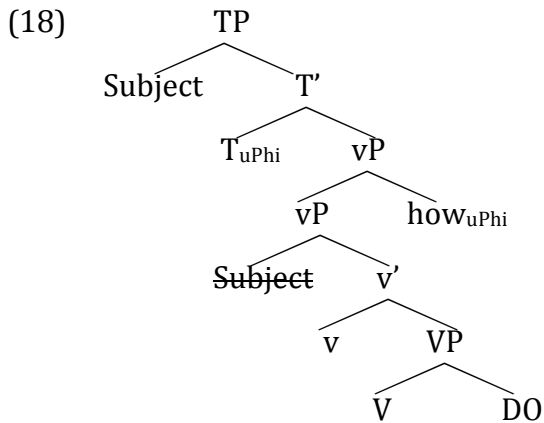
2.8 Summary and analytical preview

We have shown that agreeing 'how' is a *wh*-expression with unvalued phi features (uPhi). Possible analyses consistent with the facts presented so far include at least the following:

(17) Potential Hypotheses for Agreeing 'How'¹¹

- i. Agreeing 'how' is a sort of floating *wh*-modifier of the subject like English *all* in *The boys have all left*.
- ii. Agreeing 'how' is an interrogative version of a subject-oriented depictive secondary predicate.
- iii. Agreeing 'how' gets its phi-features by downwards spreading from T.
- iv. Agreeing 'how' is a predicate with a *pro* subject bound by the higher subject.
- v. Agreeing 'how' is a head in the functional structure of the clause and gets its phi-values through Spec-head agreement.
- vi. Agreeing 'how' is a *wh*-adjunct XP comparable to English 'how' but with uPhi which probe the subject from a position adjoined to either (a) vP or (b) TP.

Because responding to these potential analyses requires extensive diagnostic evidence, full arguments against (i)-(iv) are distributed throughout the paper. In §3 we will provide evidence for rejecting (17i) and (17ii) (flawed also by their incompatibility with our analysis of 'how' as an event-kind interrogative). §4 presents some highly significant patterns connected with non-canonical subjects, specifically agreement on 'how' with subject operators and inverted locatives. These facts will lead us in §5 to reject both the direct dependency between T and 'how' suggested in (17iii) and the controlled *pro* analysis in (iv). We argue in §5 that (17vi:a), in which 'how' is a downwards probing vP-level *wh*-adjunct, accounts for all the facts (see (18)).¹² §6 will provide the evidence against the only remaining alternative hypothesis, (17v).



3. Two Failed Analyses

3.1 Introduction

In this section we address the first two hypotheses of (17), demonstrating that ‘how’ is not a floating modifier or a secondary predicate of any sort.

3.2 Agreeing ‘how’ is not a floating modifier

3.2.1 The hypothesis

One conceivable approach to agreeing ‘how’ might be to analyze it along the lines of Sportiche’s (1988) theory of floating quantifiers. That is, ‘how’ and the subject could be hypothesized to originate as a single constituent XP in which ‘how’ is the subject’s modifier. The subject raises out of XP and moves leftwards, stranding ‘how’ as shown in (19).

- (19) a.[_{XP} SU uPhi-how]... *A hypothetical floating modifier approach to ‘how’*
 b. SU...[_{XP} ~~SU~~ uPhi-how]...

While this analysis would make the agreement relationship between ‘how’ and the subject easy to explain, it is inconsistent with the restriction to a ‘what kind’ interpretation for DP-internal ‘how’ (see (11) and (12)). We will also show in §4 that ‘how’ agrees with an in situ subject of a locative inversion construction – a context

where ‘floating’ could not have taken place, casting further doubt on this as a possible analysis. Expletive and infinitive constructions provide additional evidence that we turn to next.

3.2.2 Expletives and infinitives

In Lubukusu [expletive...CP] constructions the verb bears class 6 subject agreement (see (20a)). (20b) shows that ‘how’ can agree with the expletive in these contexts.

- (20) a. Ka-nyalikhana khu-khu-pila lu-simu.
 6SA-be.possible 15-2sgOA-hit 11-phone
 ‘It is possible to call you.’
- b. Ka-nyalikhana khu-khu-pila lu-simu **ka-rie?**
 6SA-be.possible 15-2sgOA-hit 11-phone 6-how
 ‘How is it possible to call you?’

Alternatively, ‘how’ can agree with the infinitival clause. Infinitives in Bantu languages often have nominal properties; they comprise a separate noun class, class 15, and can control agreement on modifiers. (21a, b) illustrate agreement of ‘how’ in class 15.¹³

- (21) a. Ka-nyalikhana khu-khu-pila lu-simu **khu-rie?**
 6SA-be.possible 15-2sgOA-hit 11-phone 15-how
 ‘How is it possible to call you?’
- b. Khu-khu-pila lu-simu khu-nyalikhana **khu-rie?**
 15-2sgOA-hit 11-phone 15SA-be.possible 15-how
 ‘How is it possible to call you?’

(21a,b) raise questions about the nature of infinitives in Bantu languages that are outside the scope of this paper (but see note 14). For present purposes it suffices to say that these examples and the expletive agreement examples in (20) seem quite anomalous for a discontinuous modifier approach to agreeing ‘how.’

3.3 Agreeing ‘how’ is not a subject depictive

The analysis represented in (18) is not far removed from recent treatments of subject-oriented depictive secondary predicates like *drunk* in *Mary likes to attend church drunk*; or *naked* in *John danced naked*: Pylkkanen (2002, 2008) proposes that subject depictives merge at the vP level, and Irimia (2005) uses Agree to account for agreement on depictive secondary predicates in Armenian, Slovenian, and Albanian. One might therefore consider analyzing *-rie* ‘how’ as a *wh*-depictive secondary predicate.¹⁴

‘How’s ability to agree with an expletive or an infinitive (see §3.2) is a first reason for skepticism regarding such an analysis. This section presents additional evidence against the approach by showing that the interpretation of ‘how’ is not subject-oriented, that its uses are consistent in active and passive sentences, and that ‘how’ cannot agree with and modify an object in the way that secondary predicates typically can.

First, the most natural answers to agreeing ‘how’ questions are not subject-oriented depictives, This is apparent in (22), where responses that came to mind for speakers we interviewed describe manners, instruments, and even properties of the direct object. While not precluded, a subject-depictive answer is judged unexpected and somewhat anomalous. This result is unexpected if ‘how’ is analyzed as a *wh* version of a subject-oriented secondary predicate.

- (22) a. A-li-le e-nyama **a-riena?**
 3sgSA-eat-PST 9-meat 3sg-how
 ‘How did he eat the meat?’

b. Kalaa
slowly
'Slowly'

c. Nende si-chiko
answer
with 7-spoon
'with a spoon'

Instrument

d. Embisi
answer
9raw
'raw'

Object-oriented

e. #A-li-le ne-a-melile /n-a-nwile. *Subject-oriented*
answer
3sgSA-eat-PST NE-3sgSA-be.drunk /NE-3sgSA-be.tired
'He ate it (while he was) drunk/tired' (unexpected in context)

One might perhaps consider treating manners and instruments as extended properties of agents in an event and hence not incompatible with the subject depictive analysis (though (22d,e) would constitute anomalies to be explained). This brings us to our second reason for rejecting an analysis of agreeing 'how' as a secondary predicate: its uses and interpretation are indifferent to whether a sentence is active or passive, and this is uncharacteristic of secondary predication. 'How' is natural in both active and passive clauses, agreeing with the surface subject in either case, and consistently eliciting the same kinds of answers (see (23)).¹⁵

(23) a. E-nyama e-li-l-we **e-rie?**
9-9meat 9SA-eat-PST-PASS 9-how
'How was the meat eaten?'

b. Nende si-chiko
answer
with 7-7spoon
'With a spoon'

Instrument

c. Bwangu
hastily
'Hastily'

Manner answer

d. E-mbisi
answer
9-raw
'Raw'

Object-oriented

Thus the interpretation of 'how' does not co-vary with changes in the item it agrees with – there seems to be no link between the properties of the surface subject and the meaning or function of 'how'. This contrasts sharply with the behavior of secondary predicates.

Our third argument is based on Pylkkanen's (2002, 2008) observation that depictives cannot be predicated of the implicit argument in a passive, a generalization that holds up for Lubukusu secondary predicates.¹⁶ (24a) and (24b) show that Lubukusu post-verbal depictives can be predicated of an active subject or the derived subject of a passive, as they can in English. (25) demonstrates that depictives cannot modify an implicit agent of a passive.

(24) a. S-ok-ile mu-nyanja sichula.¹⁷
1sgSA-swim-PST 18-9lake naked
'I swam in the lake naked.'

b. E-nyama e-li-l-we e-mbisi.
9-meat 9SA-eat-PST-PASS 9-raw
'The meat was eaten raw.'

(25) *E-barua ey-andik-we sichula.
9-letter 9SA-write-PASS naked
*'The letter was written naked.'

In contrast, we saw in (23) that 'how' is fine in a passive sentence, ranging over the same interpretations as in an active sentence despite the fact that it agrees with the thematic object. The comparisons among (22), (23) and (25) strongly argue that 'how' is not a subject-oriented depictive secondary predicate. In addition to allowing

object-oriented answers in transitive clauses where it agrees with the subject, the ability of agreeing ‘how’ to interrogate such matters as the manner or instrument in an event does not co-vary with whether the logical subject is explicit or implicit, or with whether the structural subject is agent or theme. These facts are consistent with our analysis of ‘how’ as an ordinary manner *wh*-phrase; not with an analysis of how as a *wh*-version of a subject-oriented depictive.

One final reason for rejecting an analysis of ‘how’ as a *wh*-depictive secondary predicate is that it is unable to modify and agree with an object and retain the ‘how’ meaning, in contrast to the general behavior of secondary predicates. While the word *-rie(na)* may in fact agree with an object, it is easily demonstrated that when it does so its location is DP-internal as in (11) and (12), and not that of a depictive secondary predicate at all. This is clear from the fact that the ‘what kind’ meaning is its only interpretation in this context (see (26))—the ‘how’ reading is lost. As Pylkkanen (2002:26) notes, depictive secondary predicates describe a state which holds of one of the arguments of the verb during the event described by the verb. For this reason, individual-level adjectives sound strange as depictives (an observation for which Pylkkanen cites Geuder 2000); thus *He entered the room annoyed* is fine, unlike *#He entered the room tall*. Given this, the restriction to ‘what kind’ readings for object-agreeing *-rie(na)* is inconsistent with a *wh*-secondary predicate analysis.

- (26) Ba-khal-ile lu-karatasi **lu-riena?**
 2SA-cut-PST 11-paper 11-how
 ‘What kind of paper did they cut? (i.e. letter or legal size?)
 #’How did they cut the paper?’ (i.e. into circles or triangles)

In contrast to cases like (26), an object-oriented answer to a *-rie(na)* question is readily available when *-rie(na)* agrees with the subject, as shown in (27).¹⁸

(27) a. Ba-khal-ile lu-karatasi **ba-riena?**
 2SA-cut-PST 11-paper 2-how
 'How did they cut the paper?'

b. mu-bi-kara/ mu-bi-tonyi *Object-oriented answer*
 18-8-circle/ 18-8-piece
 'into circles/pieces'

Moreover, when *-rie(na)* is construed with an object, it must generally be adjacent to it, as demonstrated in (28).¹⁹ This is consistent with an analysis of it as a DP-internal *wh*-phrase, but incompatible with an object depictive secondary predicate analysis.

(28) *Ba-khal-ile lu-karatasi [nende ka-ma-kasi] lu-riena?
 2SA-cut-PST 11-paper with 6-6-scissors 11-how
 ?*'What kind of paper did they cut with the scissors? (i.e. letter or legal size)
 *'How did they cut the paper with the scissors?' (i.e. into circles or triangles)

Summing up this section, *-rie(na)* cannot function as a *wh*-object depictive, and in its use forming 'how' questions *-rie(na)* does not pattern like a *wh*-subject depictive secondary predicate either – the most natural kinds of responses to *-rie(na)* questions are not subject depictives, and the content of responses is consistent even when the subject is changed from an agent to a theme by passivization. For all of these reasons we will not pursue a *wh*-secondary predicate analysis of *-rie(na)* and will henceforth refer to *-rie(na)* solely as agreeing 'how,' avoiding for the most part further discussion of its DP-internal usage.

3.4 Summary

In this section we argued against two logical possibilities for analyzing agreeing ‘how’: (17i) as a floating modifier; and (17ii) as a *wh*-subject depictive secondary predicate. We will show in the next section that in operator and inversion constructions, agreement on ‘how’ differs from SA on T. The facts lead us to reject (17iii), the hypothesis that agreement on ‘how’ is copied or spread from T; and (17iv), the hypothesis that ‘how’ is a predicate agreeing with a *pro* subject controlled by the overt subject of the main clause. Arguments against analysis of ‘how’ as a functional head (hypothesis (17v)) are presented in §6.

4. Mismatches between ‘how’ and T with non-canonical subjects

4.1 Introduction

As noted in (17iii), a plausible approach to Lubukusu agreeing ‘how’ might rely on some mechanism of feature-sharing between ‘how’ and T. We will argue against this possibility based on three constructions with non-canonical subjects: subject extractions and two varieties of locative inversion.²⁰ After briefly describing each construction, we illustrate the pattern of agreement that occurs when the ‘how’ question word is added. We demonstrate that in locative inversion and subject extraction contexts, the features of agreement on ‘how’ do not typically match those of SA on the verb. These patterns demonstrate that any sort of feature-sharing relationship between T and ‘how’ is empirically insufficient, leading us to conclude in §5 that ‘how’ has independent *uPhi* probing downwards for valuation by the subject in its base position (Spec, *vP*) -- hypothesis (17vi), as illustrated in (18).

4.2 Operator subjects

When a 3rd person singular animate subject is questioned or relativized, a special agreement form [o-] appears on the verb in place of the usual [a-] (the special form is glossed AAE = alternative agreement effect). These facts are illustrated in (29):

- (29) a. Naliaka a-li mu-nju. (Wasike
2007) 1Naliaka 3sgSA-be 18-house [Lubukusu]
'Naliaka is in the house.'
- b. Naanu oo-li mu-nju?
1who AAE-be 18-house
'Who is in the house?'
- c.*Naanua-li mu-nju?
1who 3sgSA-be 18-house
'Who is in the house?'

Kinyalolo (1991) demonstrates that the crucial property of AAE in Kilega is an absence of person features (agreement in noun class is not affected). Henderson (to appear) and Diercks (2010) show that in Bemba, Luganda, and Lubukusu as well, the alternate agreement lacks person features.²¹ They argue that syntactic strategies to avoid or repair extraction from Spec, TP give rise to this effect, relating it to 'that-trace' and *que-qui* phenomena of English and French respectively (see Rizzi & Shlonsky 2007). What is important for our purposes is not the details of these analyses but the fact that 'how' can only bear [a-] agreement. Thus there is a mismatch between subject agreement and 'how' agreement in these cases, unexpected if the latter was contingent on the former or related to Spec, TP.

- (30) Naanu oo-tekh-ile e-ngokho a-riena /*o-riena?
1who AAE-cook-PST 9-chicken 3sg-how/*AAE-how
'Who cooked the chicken how?' *Subject Question + HOW*

- (31) Ba-a-bona o-mu-ndu ow-a-tekha e-ngokho a-riena /*o-riena?

2SA-PST-see 1-1-person AAE-PST-cook 9-chicken 3sg-how /*AAE-how
 ‘They saw [the person who cooked the chicken how]?’ *Subject Relative + HOW*

4.3 ‘How’ agreement in locative inversion constructions

4.3.1 Introduction to Luyia locatives

Like many other Bantu languages, Lubukusu has three locative noun classes. In Lubukusu these are primarily expressed in the morphemes *a-*, *khu-*, *mu-* added to a noun, replacing the so-called pre-prefix but leaving intact the inner prefix of the noun’s intrinsic class (see (32), from Mutonyi 2000). As (33) demonstrates, locativized nouns can appear in argument positions and control agreement in the locative noun classes; thus they pattern like DPs.

- (32) a. **ku**-mu-lyaango b. **a**-mu-lyaango
 3-3-door 16-3-door
 ‘(a/the) door’ ‘near the door’
- c. **khu**-mu-lyaango. d. **mu**-mu-lyaango
 17-3-door 18-3-door
 ‘on the door’ ‘in the door’

- (33) **Mu**-n-ju **mu**-unya.
 18-9-house 18SA-stink
 ‘The inside of the house stinks.’

Based on similar facts in Shona and Chichewa, Myers (1987) and Bresnan & Mchombo (1995) propose that the cognate morphemes *pa*, *ku* and *mu* are nouns. Because they do not trigger ‘of’ insertion like other nouns and fail to meet a 2 mora minimum size requirement to which only functional categories are exempt in Chichewa, Carstens (1997) argues instead that Chichewa locative DPs are headed by null nouns: $[N\ e]_{C16}$ – ‘surface’, $[N\ e]_{C17}$ ‘vicinity’, and $[N\ e]_{C18}$ ‘inside’. Assuming there is a DP headed by a silent locative noun which contains and domainates the DP headed by the “locativized” noun allows Carstens to explain concord and

modification phenomena exemplified in (34) (Carstens 1997:384-5). Carstens analyzes Chichewa *pa*, *ku*, and *mu* as gender-particular Case-markers or prepositions selected by the silent locative nominals (see (34')).²²

We have found that a Lubukusu locativized noun can have modifiers that agree in its intrinsic class or in its locative class, just as in Chichewa – evidence that the complement of *a-*, *khu-*, or *mu-* is at least an NP and perhaps a DP. The superordinate locative DP always controls SA in the locative class. Hence we adopt Carstens’s analysis of Chichewa for Lubukusu. The structure of (35a) is as shown in (35b) (N-to-D movements proposed in Carstens’s account are omitted for simplicity’s sake).

(34) a. pa-li nchenche pa chiseko chirichonse [Chichewa]
 16SA-be 10fly 16LOC 7door 7every (Carstens 1997)
 ‘There are flies on every door.’

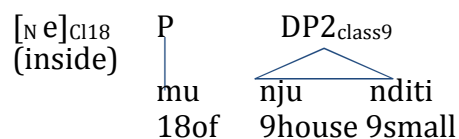
b. pa-li nchenche pa chiseko pariponse
 16SA-be 10fly 16LOC 7door 16every
 ‘There are flies all over the door’ (i.e. on every surface of it)

(34') a. ...[DP1...[NP1 [N e]_{Cl16} pa [DP2...[NP2 chiseko chirichonse]]]]
 (surface) 16LOC 7door 7every
 ‘on every door’

b' ...[DP1...[NP1 [N e]_{Cl16} pa [DP2...[NP2 chiseko]] pariponse]]
 (surface) 16LOC 7door 16every
 ‘on every part of the door’

(35) a. Mu-n-ju n-diti mu-unya. [Lubukusu]
 18-9-house 9-small 18SA-stink
 ‘The inside of the small house stinks.’





We turn now to the facts of locative inversion (LI). We will show that, like subject extraction, LI exhibits mismatches between agreement on ‘how’ and on T.

4.3.2 Two kinds of locative inversion

Two types of LI are found in Lubukusu. Both involve a post-verbal clitic agreeing with the fronted locative phrase (on which see §7), but their properties differ in other crucial respects. In one variety, which Diercks (2011a) calls Repeated Agreement LI (RALI), subject agreement (SA) reflects the features of the fronted locative phrase (henceforth DP_{loc} ; and see (37)). Only unaccusative verbs can participate in this construction. In the other, which Diercks calls Disjoint Agreement LI (DALI), SA is with the post-verbal thematic subject (SU) (see (38)). Both unaccusative and unergative verbs can participate in DALI. (Henceforth for clarity we underline the class prefix of the thematic subject, and agreement with it; and boldface the locative prefix on DP_{loc} and locative agreement with it).

(36) Ku-mu-saala kw-a-kwa **mu**-mu-siiru. [Lubukusu]
 3-3-tree 3SA-PST-fall 18-3-forest *Declarative*
 ‘A tree fell in the forest.’

(37) **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala. *Repeated Agreement LI*
 18-3-forest 18SA-PST-fall-18L 3-3-tree *Unaccusative only*
 ‘In the forest fell a tree’

(38) a. **Mu**-mu-siiru kw-a-kwa-**mo** ku-mu-saala. *Disjoint Agreement LI*
 18-3-forest 3SA-PST-fall-18L 3-3-tree *Unaccusative*
 ‘In the forest fell a tree.’

 b. **Mw**-iloo e-sun-ile-**mo** e-nduyu.
 18-5hole 9SA-jump-PST-18L 9-9rabbit *Unergative*

‘Into the hole jumped the rabbit.’

Diercks shows that locative inversion is possible only in clauses where the verb’s meaning includes or is suggestive of directionality like ‘fall’ and ‘jump into’; or is fairly intimately tied to a location, as is arguably the case for the verb ‘grow’ referring to trees and plants, entailing as it does that they send roots into the ground. This restriction is illustrated in the unacceptability of (39).

(39) ***mw-i-duka mw-/ka-a-chekha-mo o-mw-ana.** *LI with unselected locative*
 18-9-store 18SA/3sgSA-PST-laugh-18L1-1-child
 ‘In the store laughed a child.’

Based on facts like (39) Diercks argues that inverted locatives are selected arguments, merged as sister to V. Apart from this, he demonstrates that the constructions have the divergent structures in (40) and (41):

(40) **Repeated agreement LI (RALI):** *DP_{loc} raises to Spec, TP; thematic SU in situ*
 [TP LOC T-v-V... [VP \forall [VP SUBJ \forall LOC]]] *unaccusative only*

(41) **Disjoint agreement LI (DALI):** *Thematic SU to Spec TP; DP_{loc} to Spec, CP*
 a. [CP LOC C-T-v-V [TP SUBJ T [VP \forall [VP SUBJ \forall LOC]]]] *unaccusative*
 b. [CP LOC C-T-v-V [TP SUBJ T [VP SUBJ \forall [VP \forall LOC]]]] *unergative*

The crucial contrast is thus that in RALI DP_{loc} undergoes A-movement to Spec, TP. In contrast DALI involves raising of SU to Spec, TP and raising of DP_{loc} to Spec, CP. The features of SA on the verb are a helpful indicator of this difference.

While we do not want to devote too much space to the details LI, it is worth presenting the evidence for the representations in (40) and (41) since LI plays an important role in the analysis of agreeing ‘how’ in sections to follow. All of the data and arguments below are drawn from Diercks (2011a).

Our first concern is to motivate the contrasting positions of the fronted locative phrases in the two constructions. The fact that SA agrees with DP_{loc} in RALI but not DALI constructions provides an initial argument in support of the divergent structures in (40) and (41). Additional, crucial evidence for the two structures in (40) and (41) comes from morphosyntactic properties of extraction: subject extraction triggers C-agreement and disallows a free-standing complementizer, as seen in the subject relative clause in (42). In contrast, non-subject extraction—illustrated by the object relative clause in (43)—necessitates the free-standing complementizer and disallows C-agreement. Thus extraction provides a diagnostic for whether an A'-moving expression is a structural subject or not.

(42) ba-ba-andu (*ni-bo) **ba**-ba-a-kula ka-ma-tunda [Lubukusu]
 2-2-people (*COMP-2) 2CA-2SA-buy 6-6-fruit **Subject Relative Clause**
 'the people who bought the fruit'

(43) ka-ma-tunda *(ni-ko) ba-ba-andu ba-a-kula
 6-6-fruit *(COMP-6) 2-2-people 2SA-PST-buy **Object Relative Clause**
 'the fruit which the people bought'

The positions posited for the fronted locatives in (40) versus (41) for RALI and DALI respectively make different predictions for the morphosyntax of extraction: when a fronted locative is extracted, in RALI constructions C-agreement should occur because the locative is in canonical subject position. In contrast, if the locative is relativized or questioned in a DALI construction, the free-standing complementizer should occur rather than C-agreement, because the fronted locative is a non-subject. As shown in (44) and (45), respectively, these are precisely the facts.

(44) mu-mu-siiru **mu**-mw-a-kwa-mo ku-mu-saala [Lubukusu]

18-3-forest 18CA-18SA-PST-fall-18L 3-3-tree **RALI Relative Clause**
'the forest in which fell a tree'

(45) mu-mu-siiru ni-mwo kw-a-kwa-mo ku-mu-saala [Lubukusu]
18-3-forest COMP-18 3SA-PST-fall-18L 3-3-tree **DALI Relative Clause**
'the forest in which fell a tree'

Diercks (2010, 2011a) demonstrates that these same morpho-syntactic asymmetries consistently differentiate subject and non-subject movements in subject-to-subject raising, clefts, and wh-extraction; when applied to LI constructions they always support the conclusion that DP_{loc} occupies the canonical subject position, Spec, TP only in RALI. Given that in DALI DP_{loc} is in a left edge position \neq Spec, TP, an A'-movement approach is attractive. This approach permits a simple account of why the verb agrees with the logical subject in DALI constructions: while $u\Phi$ of T probes DP_{loc} in a RALI construction, DP_{loc} interacts instead with C in an DALI construction and $u\Phi$ of T probes the thematic subject. The expression that values $u\Phi$ of T generally raises to Spec, TP in Lubukusu; hence the order [DP_{loc} -V-SU] suggests that the verb raises across Spec, TP to C.

We turn now to evidence supporting the claim that in DALI, the order [DP_{loc} -V-SU] results from V (to T) to C movement. While Diercks (op cit) draws on several sorts of evidence, for the sake of brevity we restrict discussion to the location of the manner adverb *bwangu* – 'quickly'. Diercks (op cit) argues that *bwangu* is a vP -level adjunct because it can never precede the inflected verb. In a clause where no inversion has occurred, *bwangu* can immediately follow the verb in which case

Diercks argues that it is left-adjoined to vP. It can also surface clause-finally, in which case it is right-adjoined under Diercks's account (see (46)).²³

(46) a. Ku-mu-saala (*) kw-a-kwa (✓) mu-mu-siiru o-mwo (bwangu)
 3-3-tree 3SA-PST-fall 18-3-forest DEM-18 (quickly)
 'A tree fell in this forest quickly.'

b. [_{TP} a tree (*quickly) fell [_{VP} (✓quickly) t_v [_{VP} t_v [in this forest]] (✓quickly)]]]

Taken together with the structures in (40) and (41), this analysis of *bwangu* makes the following prediction: in DALI constructions, the adverb should only be able to occur clause-finally, because the postverbal subject and the inflected verb have moved leftwards past even the adverb's left-adjoined position, to Spec, TP and C respectively. In contrast, assuming the postverbal subject in RALI is *in situ* within the VP, then the immediately postverbal adverb position is predicted to be available.

(47) and (48) show that the prediction is borne out.

(47) a. Mu-mu-siiru o-mwo (*) kw-a-kwa-mo (*) ku-mu-saala (bwangu)
 18-3-forest DEM-18 3SA-PST-fall-18L 3-3-tree (quickly)
 'In this forest fell a tree quickly.'

b. [_{CP} [forest]_{loc} fall+T+C [_{TP} tree t_T [_{VP} (✓quickly) [t_v [_{VP} t_{SU} t_v t_{loc} (✓quickly)]]]]]]]

(48) a. Mu-mu-siiru o-mwo (*) mw-a-kwa-mo (✓) ku-mu-saala (bwangu)
 18-3-forest DEM-18 18SA-PST-fall-18L 3-3-tree (quickly)
 'In this forest fell a tree quickly.'

b. [_{TP} [in this forest] ...fall+T... [_{VP} (✓quickly) t_v [_{VP} a tree t_v t_{loc} (✓quickly)]]]]]

An anonymous reviewer points out that the V-to-(T-to)-C component of this analysis runs counter to Julien's (2002) influential proposal that verbs in Shona raise only to the low middle field of the clause, immediately above vP. In Julien's account, verbs stop at the point of the highest verbal suffix, and verbal prefixes concatenate with the verb at PF. Assuming with Kayne (1994) that head-movement left-adjoins to its

host, the analysis explains why suffixes show mirror-image ordering in relation to the hypothetical inflectional projections of the clause, while prefixes exhibit “direct” ordering. The structure in (49) replicates Julien’s analysis of Shona verbs:

(49) [_{FinP} SUBJ SubjAgr- [_{TP} Tns- [_{MoodP} V-v-Mood [_{vP} ...]]]]

Assuming the Lubukusu diagnostics discussed above and in Diercks (2010, 2011a) are valid, DALI constructions raise an important challenge for a Julien-style account of the inflected verb in Lubukusu: the diagnostics place the subject in Spec TP and, absent head movement of the verb over Spec, TP, there is no obvious means of accounting for DALI’s LOC-V-S word order. While it is conceivable that this could be derived by pronunciation of the lower, vP-internal copy of the subject, independent motivation for this approach is lacking; and the adverb facts noted above become mysterious. Thus the explanatory benefits of the Julien-style account with respect to morpheme-ordering must be weighed against significant word order complications that it introduces in DALI constructions. In contrast, under the V-to-T-to-C analysis that we adopt, head-movement accounts straightforwardly for the syntactic facts of word order including verb, subject, and adverb positions. Morpheme order on the verb must be attributed to morphological mechanisms (*contra* Julien 2002).

It is important to note, however, that the best analysis of the verb position in DALI constructions is a question independent of the location of DP_{loc} and, given the potential analysis of lower-copy subject Spell Out, it is even independent of the question of whether the subject raises to Spec, TP. Our analysis assumes that DALI is an A'-type of LI construction, while RALI is an A-movement type of LI construction

landing in Spec, TP. This is all that is crucial to interpreting the evidence of RALI and DALI vis-à-vis the properties of agreeing ‘how’. For concreteness and expository convenience we will abstract away from the pros and cons of verb-movement, assuming it for the reasons given in Diercks (2011a), summarized above. Should the alternative in terms of lower-copy subject pronunciation prove correct, the analysis of agreeing ‘how’ in LI constructions should not be affected.

Moving our attention back to agreeing ‘how,’ as in the subject operator constructions discussed in §4.3.1, there are two logical possibilities when ‘how’ is added to an LI construction: the features on ‘how’ might match the features of SA and hence the contents of Spec, TP, or they might mismatch, agreeing with the expression that remains in the vP. In §4.3.3 we describe the pattern of facts. In §5 we provide a comprehensive analysis in terms of downwards probing by vP-adjoined ‘how.’

4.3.3. Agreeing ‘how’ in locative constructions.

In non-inverted sentences involving locatives, ‘how’ can only agree with the preverbal subject, as is consistent with the data reported so far.

(50) Ku-mu-saala kw-a-kwa **mu**-mu-siiru ku-rie? [S V LOC]
 3-3-tree 3SA-PST-fall 18-3-forest 3-how
 ‘How did a tree fall in the forest?’

In inversion constructions, however, judgments diverge slightly among speakers. Of our three main consultants, speakers #1 and #2 accept agreement on ‘how’ only with the post-verbal thematic subject. Agreement with the class 18 preverbal DP_{loc} is strongly rejected even in (51a), where SA on the verb is class 18.²⁵

(51) Locative inversion + agreeing ‘how’, Speakers #1 & 2: Variety A
‘How’ can agree only with the thematic subject.

- a. **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala ku-rie / ***mu**-rie? RALI
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how / *18-how
 ‘How did a tree fall in the forest?’ (Lit: In the forest fell a tree how?)
- b. **Mu**-mu-siiru kw-a-kwa-**mo** ku-mu-saala ku-rie / ***mu**-rie?
 18-3-forest 3SA-PST-fall-18L 3-3-tree 3-how / *18-how
 ‘How did a tree fall in the forest?’ (Lit: In the forest fell a tree how?)

For speaker #3 there is divergence between the two constructions. In his judgments, ‘how’ must agree with the thematic subject SU in DALI (52b), but in RALI ‘how’ can agree with either SU or DP_{loc} in Spec TP (52a).

(52) Locative inversion + agreeing ‘how,’ Speaker #3: Variety B
*‘How’ can agree with the proposed locative **or** the thematic subject in the RALI construction, but only with the thematic subject in the DALI construction.*

- a. **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala ku-rie/**mu**-rie? RALI
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how/18-how
 ‘How did a tree fall in the forest?’ (Lit: In the forest fell a tree how?)
- b. **Mu**-mu-siiru kw-a-kwa-**mo** ku-mu-saala ku-rie/***mu**-rie? DALI
 18-3-forest 3SA-PST-fall-18L 3-3-tree 3-how/*18-how
 ‘How did a tree fall in the forest?’ (Lit: In the forest fell a tree how?)

The properties of ‘how’ agreement in LI constructions are summarized in (53):

(53) Possible ‘How’ Agreements in Lubukusu Locative Inversions

	Variety A		Variety B	
	Thematic Subject	Fronted Locative	Thematic Subject	Fronted Locative
RALI	✓	*	✓	✓
DALI	✓	*	✓	*

The pattern, then, is that ‘how’ can agree with the post-verbal thematic SU in all LI constructions for all speakers, and ‘how’ cannot agree with the fronted DP_{loc} in DALI constructions for any speakers. The sole point of variation is in RALI, where the

fronted DP_{loc} triggers SA. Variety B allows ‘how’ to agree with DP_{loc} as an option;

Variety A does not.

5. Analysis of agreeing ‘how’

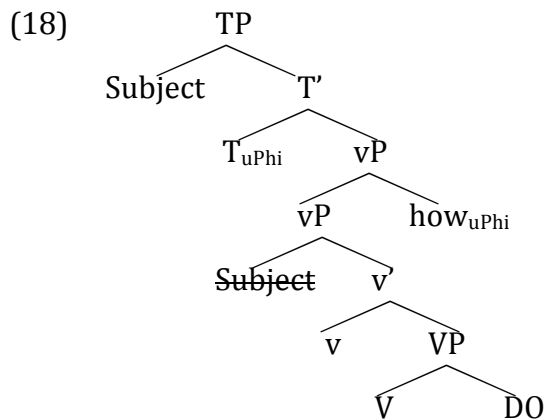
5.1 Our proposal

We have established that in two distinct circumstances, ‘how’ agreement diverges

from SA:

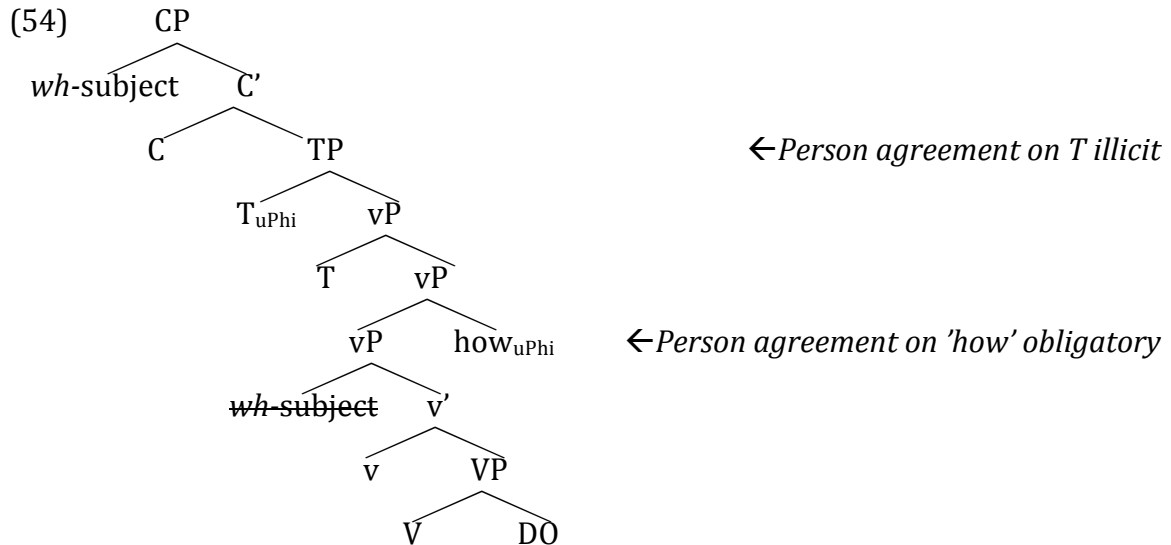
- (i) When a subject is extracted, ‘how’ agrees with it in person, number, and gender while the verb agrees with it only in number and gender.
- (ii) When a locative phrase occupies Spec, TP, all speakers accept agreement with the thematic, *in situ* subject. For two out of three speakers this is the only licit option.

To account for the mismatches between agreement on ‘how’ and SA on T, we propose that ‘how’ has its own uPhi and probes the subject independently. In line with its position and the location of modifiers that are typical answers to ‘how’ questions, we analyze agreeing ‘how’ as a right adjunct to vP. The closest c-command locality constraint on Agree ensures that ‘how’s uPhi features will be valued by the thematic subject (see (18), repeated below).



5.2 Analysis of agreement with operator subjects.

As shown in §4.2, ‘how’ bears canonical [a-] SA in operator constructions while T bears the special [o-] agreement lacking person features; we represent schematically in (54).



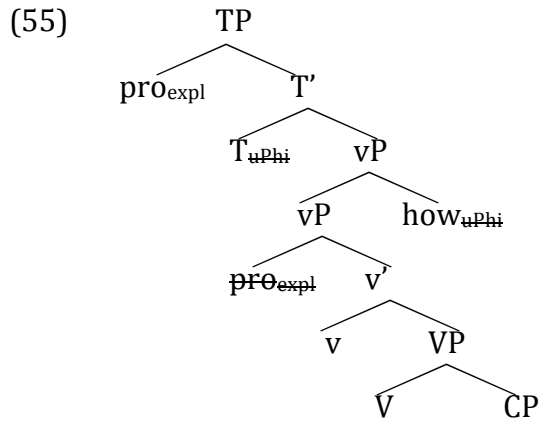
§4.2 noted that Henderson (2009; to appear) and Diercks (2009, 2010) analyze T’s special agreement in operator constructions as related to ‘that-trace’ and *que-qui* effects, and as a means of avoiding or repairing subject extraction from Spec, TP (cf. Rizzi & Shlonsky 2007).²⁶ The mismatch in features between ‘how’ and T is therefore important evidence that the two probe independently.

We conclude that agreement on ‘how’ is not parasitic on T’s features (*contra* hypothesis (17iii)). The facts also strongly suggest that ‘how’ does not probe Spec, TP, as it is questionable whether the subject ever occupies this position (see Diercks 2010). Rather, the facts argue that ‘how’ probes and agrees with the subject in its base position.

5.3 Analysis of ‘how’ in expletive constructions

A clear prediction of the analysis in (18) is that ‘how’ will agree with an expression other than a thematic subject, provided that expression is the most local goal for Agree. The availability of expletive agreement on ‘how’ strongly supports this conclusion.²⁷ We propose that when an expletive *pro* is merged in Spec, vP of a ‘how’ question it is probed by uPhi of ‘how’ under closest c-command (see (20b) repeated below, and (55)).

- (20) b. Ka-nyalikhana khu-khu-pila lu-simu ka-rie?
 6SA-be.possible 15-2sgOA-hit 11-phone 6-how
 ‘How is it possible to call you?’



Merging of expletives to Spec, vP is proposed in Bowers (2002) (and see Radford 2009). Thus the facts of ‘how’ agreement lend support to these independently motivated analyses.

5.4 Accounting for the locative inversion facts.

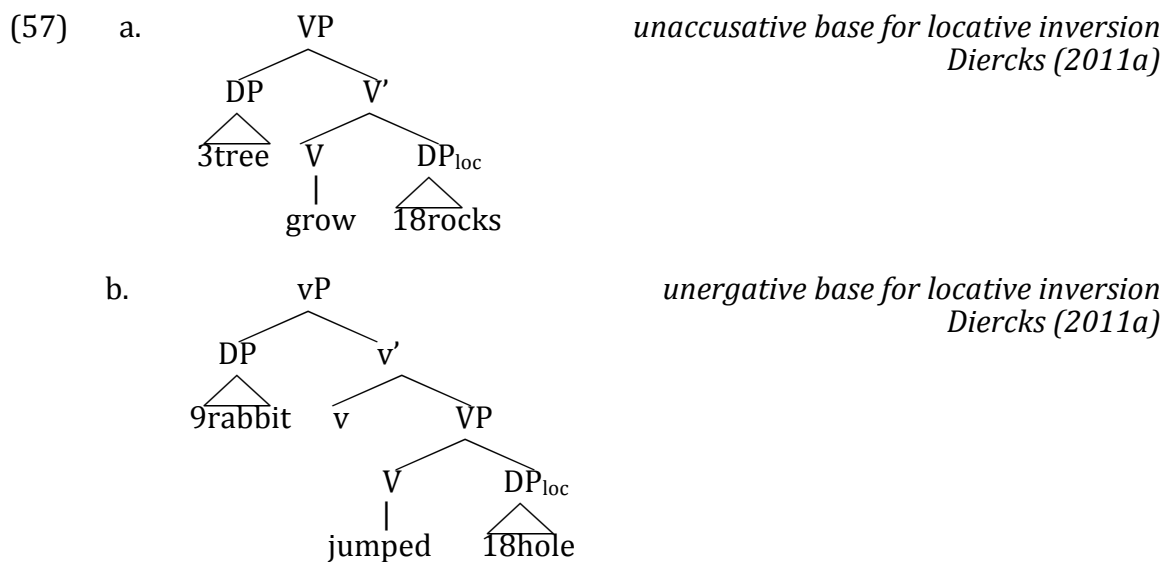
5.4.1 The basics

We saw in §4.3 that there are two Lubukusu LI constructions, RALI and DALI, and speakers’ judgments diverge as to which expression ‘how’ agrees with in RALI. In

this section we will present an account, building on the analysis of LI in Diercks (2011a).

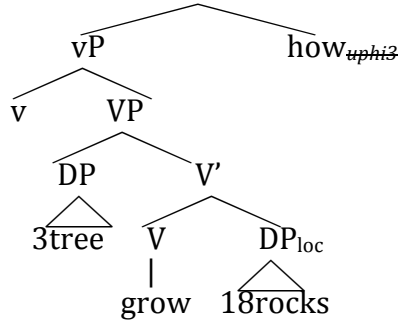
Recall from §4.3.2 that inverting locatives are merged as sisters to V (cf. Diercks 2010, 2011a). Given this, the LI constructions of (56) are represented in (57).²⁸

- (56) a. **Mu**-ma-vale **mu**-mela-**mo** ku-mu-rogoro. *unaccusative RALI*
 18-6-rocks 18-grow-18L 3-3-tree
 'In the rocks grew a tree.'
- b. **Mw**-iloo e-sun-ile-**mo** e-nduyu. *unergative DALI*
 18-5hole 9SA-jump-PST-18L 9-9rabbit
 'Into the hole jumped the rabbit'

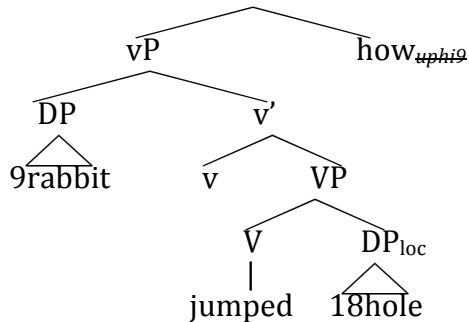


In combination with our analysis of 'how' as a vP adjunct, Diercks' proposals predict that the closest DP to 'how' is the thematic subject in both LI constructions. This accounts for the fact that agreement on 'how' is always with the thematic subject in Lubukusu Variety A.

(58) a. vP *Agreeing 'how': unaccusative verb with selected locative*



b. vP *Agreeing 'how': unergative verb with selected locative*



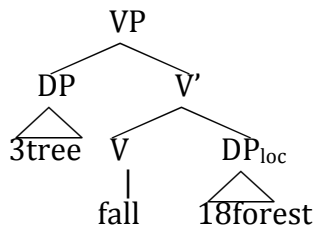
5.4.2 RALI in Variety B

Recall however that in RALI, Speaker #3 accepts agreement on 'how' with either the postverbal subject or fronted DP_{loc} in Spec TP (see (52), repeated below). We propose that in Variety B there is a structural ambiguity in unaccusative constructions with selected locatives: either DP_{loc} or the theme argument can merge as sister to the verb (59a,b).

(52) Locative inversion + agreeing 'how,' Speaker #3: **Variety B**
*'How' can agree with the proposed locative **or** the thematic subject in the RALI construction, but only with the thematic subject in the DALI construction.*

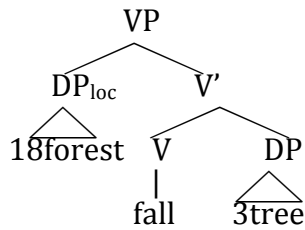
- a. **Mu-mu-siiru mw-a-kwa-mo ku-mu-saala ku-rie/mu-rie?** *RALI*
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how/18-how
 'How did a tree fall in the forest?' (Lit: In the forest fell a tree how?)
- b. **Mu-mu-siiru kw-a-kwa-mo ku-mu-saala ku-rie/*mu-rie?** *DALI*
 18-3-forest 3SA-PST-fall-18L 3-3-tree 3-how /*18-how
 'How did a tree fall in the forest?' (Lit: In the forest fell a tree how?)

(59) a.



Base for RALI (Diercks 2011a)

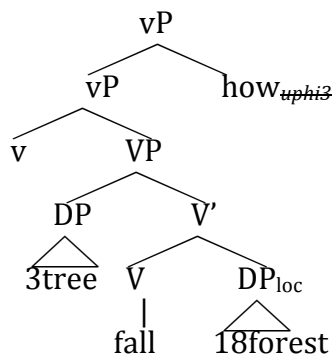
b.



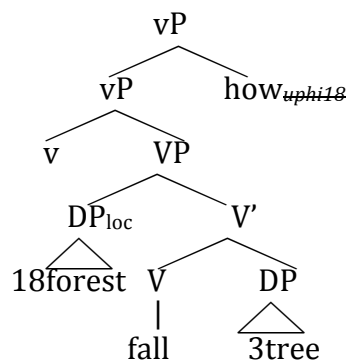
Alternative base for RALI motivated by 'how' agreement options of Speaker #3

As a result, either of the two expressions may be more local to 'how' (see (60a,b)).

(60) a.



b.

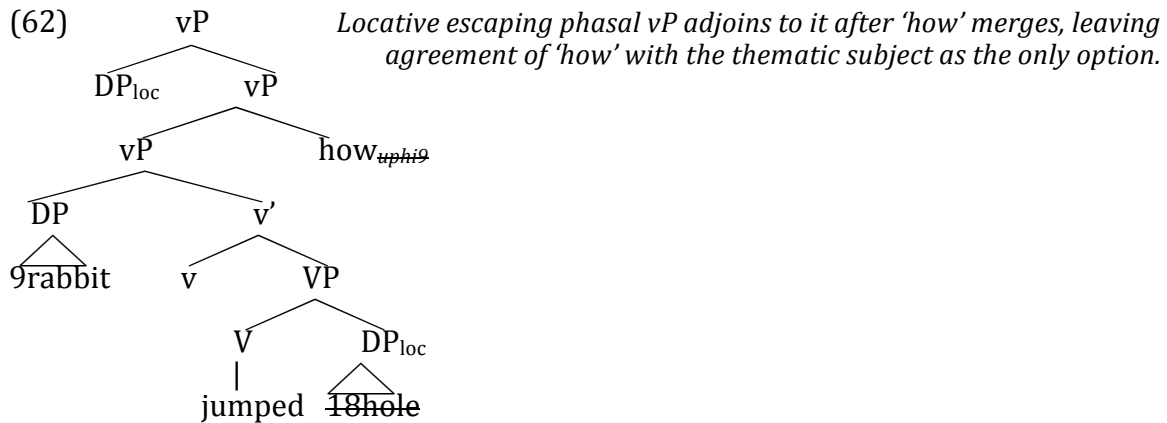


5.4.3 DALI and an issue in Variety B

We showed in §4.3.3 that for all speakers, 'how' can only agree with the thematic subject in an unergative LI, not with DP_{loc} (see (61)). (58b) sketched out why this is

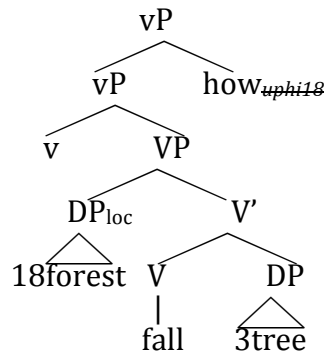
so, and (62) demonstrates in greater detail: a locative selected by V will necessarily merge lower than the agentive subject in Spec, vP. This pattern of facts is predicted even under the assumption that the inverting DP_{loc} must adjoin to the unergative vP to escape the vP phase (Chomsky 2001). It is well established that Merge takes precedence over Move operations (Chomsky 1995, 2001), so ‘how’ will merge before DP_{loc} adjoins, ensuring that the unergative subject is the most local goal for Agree in its c-command domain.

- (61) **Mw-ilo** e-sun-ile-mo e-nduyu subuhi e-rie /*mu-rie?
 18-5hole 9SA-jump-PST-18L 9-9rabbit morning 9-how/*18-how
 ‘How did the rabbit jump into the hole this morning?’
 [Lit: Into the hole jumped the rabbit this morning how?] *unergative DALI*



What we have not explained so far is why the alternative base for unaccusative LI in Variety B (see (59b), repeated below) can result in agreement on ‘how’ in RALI (where DP_{loc} is in Spec, TP), but not in the DALI construction, where the thematic subject raises to Spec, TP and DP_{loc} occupies Spec, CP. Agreement between ‘how’ and DP_{loc} is uniformly unacceptable in this case (see (52b), repeated below).

(59) b.



Why can this feed RALI but not DALI?

(52) b. **Mu**-mu-siiru kw-a-kwa-**mo** ku-mu-saala ku-rie/***mu**-rie? DALI
 18-3-forest 3SA-PST-fall-18L 3-3-tree 3-how/*18-how
 ‘How did a tree fall in the forest?’ (Lit: In the forest fell a tree how?)

Given our proposal that ‘how’ agrees with the highest expression in vP, this state of affairs is in fact exactly what standard locality constraints on A-movement would lead one to expect: DP_{loc} intervenes to block raising of the thematic subject to Spec, TP in (59b). We will see in §7 that locatives have a special means of transiting out of VP across the merge position of subjects in LI constructions, but not vice-versa (a preview of this account is provided in §5.4.5). Hence the only option for continuing (59b) is raising DP_{loc} to Spec, TP – a RALI construction. Our findings argue strongly that expressions in VP are not equidistant from probes outside it, though this has been a common approach to inversion phenomena over the years (see note 41 and references therein). We return to this issue in §7 and §8.

5.4.4 The argument against (17v)

We are now in a position to consider hypothesis (17v), repeated below:

(17v) Agreeing ‘how’ is a predicate with a *pro* subject bound by the main clause subject under c-command.

An anonymous reviewer suggests that since 'how' follows the main clause, it should always occupy a position c-commanded by the subject. Agreement could therefore be based on a control or binding relationship between the main clause subject and a *pro* subject within an XP whose predicate, 'how', is a kind of interrogative verb/predicate. We represent a version of this hypothesis in (63) where 'how' is identified as V#2 heading VP2, and the constituent surrounding 'how' is labeled HowP. So that it will fall within the c-command domain of both in situ and ex situ subject positions, we represent it as adjoined to VP.

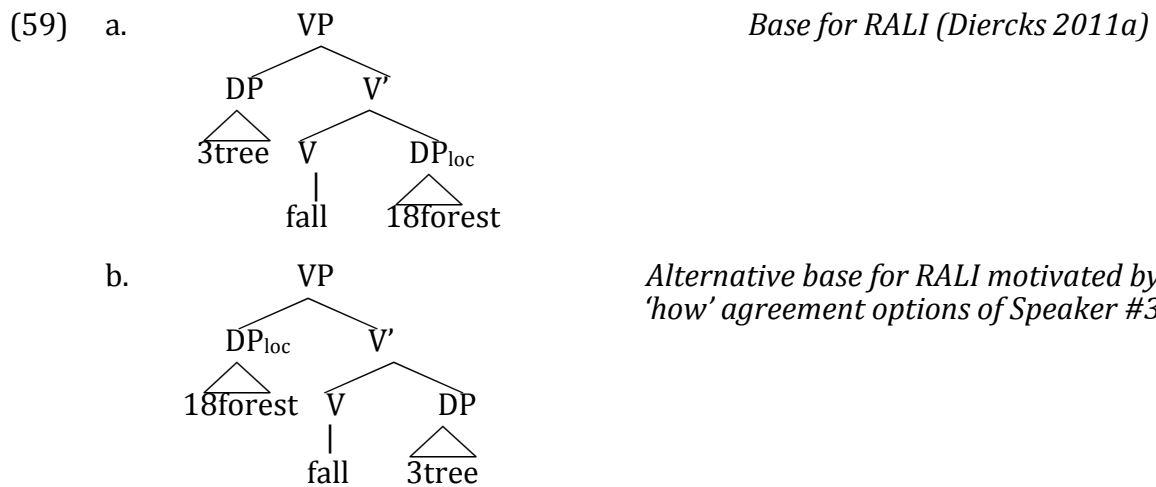
(63) [TP SU_i T [VP SU_i V [[VP₁ ...V#1...] [HowP *pro*_i [VP₂ how_{V#2}]]]]

The fatal argument against this hypothesis is that it cannot account for the facts of RALI, the A-movement LI construction. Recall that RALI is possible only with verbs whose meanings entail directionality or another strong locative component; hence the inverting locatives are analyzed as selected by the verb. RALI is also restricted to unaccusatives, whose subjects are arguments selected by the verb as well. RALI constructions move DP_{Loc} to Spec, TP leaving the thematic subjects VP-internal. We reproduce in (64) and (65) the crucial data showing that all speakers allow 'how' to agree with the post-verbal in situ subject; speaker #3 also accepts agreement with the inverted locative.

(64) **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala ku-rie? OK for all speakers
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how
 'How did a tree fall in the forest?' (Lit: In the forest fell a tree how?)

(65) **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala **mu**-rie? OK for speaker #3
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how
 'How did a tree fall in the forest?' (Lit: In the forest fell a tree how?)

The structures that we adopted for RALI in (59) are repeated below. The problem that arises in relation to the proposed analysis in (63) is that HowP is not low enough for its *pro* subject to be c-commanded by the VP-internal subject, and there is no modification of the representations under which this could be the case, particularly given that ‘how’ can never agree with a direct object.

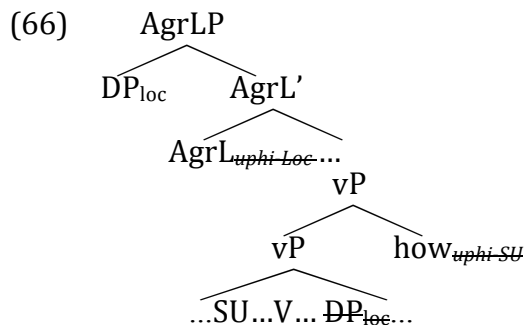


The only conceivable way to implement a controlled/bound *pro* analysis, based as it is on c-command by the main clause agreement trigger, would be to assume (contrary to (59)) that ‘HowP’ is complement to the verb and that the verb’s theme and locative arguments are higher up in the structure. But there is no evidence to support a selectional relationship between the verb and ‘how’, while in contrast evidence is robust that the verb selects the locative and the unaccusative subject. An even more severe problem arises if we nonetheless assume that ‘how’ can be merged lowest in VP so that an in situ unaccusative subject can c-command it: on such an analysis there is no accounting for the fact that ‘how’ cannot agree with the

direct object in a transitive clause. We will accordingly not pursue this possibility further here.

5.4.5 Summary and remarks

We have demonstrated in §5 that agreeing ‘how’ is a *wh*-manner adjunct bearing uPhi which probe ‘how’s c-command domain independently of T. The ‘how’ agreement patterns in RALI and DALI constructions of both Lubukusu varieties are accounted for by this proposal. We will argue in §7 that the next derivational step in these constructions is to merge the locative clitic that always surfaces on the verb in LIs. In our analysis, the clitic heads a projection that Diercks (2011a) dubs AgrLP. It probes for and raises DP_{loc} and is thus crucial to allowing movement of the locative over the subject DP.



There is more to be said about the properties of AgrL and its role in the two LI constructions. In §7 and §8 we address this and several complex locality questions raised by LI with ‘how’. But we first turn to implications of agreeing ‘how’ for agreement theory.

6. Luyia ‘how’ and agreement theory

6.1 Introduction

In this section we consider some agreement-theoretic issues connected with agreeing ‘how.’ We will argue that the ‘how’ facts contradict the claims of Baker (2008) and Diercks (2011a), that agreement in Bantu languages probes upwards as a matter of parametric choice. We will show that it is also inconsistent with the Spec, head agreement hypothesis. We will argue moreover that it is incompatible with the claim in Chomsky (2007, 2008) and Richards (2007) that probe features are only introduced on phase heads. Lastly we will argue that proposals in Carstens (2010a, 2011) account for all the agreement facts.

6.2 Against an upwards Agree account

Baker (2008) and Diercks (2011a) argue that the directionality of Agree is parameterized, searching upwards in most Bantu languages rather than probing its c-command domain. Major difficulties arise for an upward Agree account in RALI ‘how’ questions, however, where ‘how’ agrees with the *in situ* unaccusative subject (see (51a) repeated below).

(51) a. **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala ku-rie / ***mu**-rie? RALI
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how / *18-how
 ‘How did a tree fall in the forest?’ (Lit: In the forest fell a tree how?)

For upwards Agree to work in a case like (51a), ‘how’ would have to be lower than the unaccusative SU. But independent evidence regarding the position of the thematic SU in LI reported in Diercks (2011a: 710-714) argues that it remains *in situ* within the VP, as discussed in §4.3.2. And as we noted in §5.4.4, if ‘how’ can be positioned lower in the clause than the *in situ* unaccusative subject, it becomes difficult to explain why ‘how’ cannot agree upwards with the direct object of a

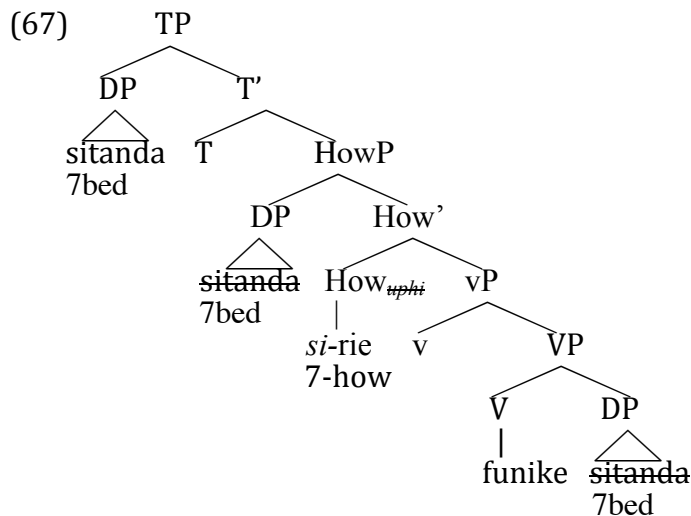
transitive clause. If we were to assume, contrary to the evidence, that the unaccusative SU raises to some intermediate position, it is not obvious where this would be, why it would move, why a direct object could not also move there, and how upwards agreement with the raised DP_{loc} is to be avoided. A downwards Agree account avoids all of these problems.²⁹

6.3 Against a Spec, head agreement account

An alternate account of agreeing ‘how’ might suppose that ‘how’ heads a functional projection in the clause and the subject passes through its Spec (see Wasike 2007 for a proposal along these lines). As we will show here, however, word order in ‘how’ constructions is very difficult to reconcile with analysis of ‘how’ as a head.

Consider (67), an illustration of the hypothesis that ‘how’ agrees with an expression that transits through a Spec, HowP based on (1f) repeated below.

- (1) f. Si-tanda si-funikhe si-rie(na)?
 7bed 7SA-broke 7-how
 ‘How did the bed break?’



*Hypothesis to be rejected:
 ‘how’ as a functional head*

We now present three word order arguments against this approach.

First, Lubukusu is a strictly head-initial language and the position of ‘how’ is always post-verbal. Raising of the subject DP in (67) goes a little way towards deriving the surface word order, but there is no obvious means of moving the verb to the left of ‘how’. If ‘how’ is a head, it should block verb raising, leaving the verb to ‘how’s right.³⁰

Second, recall that in transitive clauses the direct object often precedes ‘how’ (see (68)). This is inconsistent with the analysis of ‘how’ as a head, given Lubukusu’s strict left-headedness. As (69) illustrates, the HowP analysis of agreeing ‘how’ predicts that not only the verb but also the direct object will appear to the right of ‘how’, contrary to fact.

(68) Baba-ana ba-kha-kule bi-tabu ba-rie(ena)?
 2-children 2SA-FUT-buy 8-book 2-how
 ‘How will the children buy books?’

(69) *[_{TP} the children [_{T'} FUT [_{HowP} *t* [_{How'} how [_{VP} *t* buy the books]]]]]

There is one possible means of deriving surface word order under an analysis of ‘how’ as head of HowP: pied piping the entire vP containing the verb and its object to Spec of ‘how’:

(70) [_{TP} the children [_{T'} FUT [_{HowP} [_{VP} *t* buy the books] [_{How'} how *t*_{VP}]]]]]

This brings us to our third word order argument against analysis of ‘how’ as a head. Recall that, like all other *wh*-phrases, ‘how’ has an alternative immediately postverbal position (see §2.3). This is difficult to reconcile with a pied-piping/‘how’-as-head account of the consistently post-verbal position of ‘how’. If we adopt the assumption that ‘how’ is a head, raising the goal that values its uPhi to Spec, HowP,

the only way of deriving the alternate word order would seem to be positing an optional movement of the direct object out of the vP before the vP raises (see (71)). A different derivation would be needed to account for a post-verbal *wh*-phrase like ‘which book’ in (72b), which is not plausibly a head. To attribute a systematic alternation that all *wh*-phrases participate in to such disparate sources without independent motivation seems ill-warranted.³¹

(71) [_{TP} the children [_{T'} FUT [_{HowP} [_{vP} *t*_{SU} buy *t*_{OB}] [_{How'} how *t*_{VP}]]]] [_{DP}the books]

- (72) a. Ba-khasi ba-we-le ba-ba-ana bi-tabu. *Neutral word order*
 2-woman 2SA-give-PST 2-2-child 8-book
 ‘The women gave the children books.’
- b. Ba-khasi ba-we-le [bi-tabu si] ba-ba-ana? *Postverbal position*
 2-woman 2SA-give-PST 8-book what 2-2-child *for ‘which book’*
 ‘What books did the women give the children?’

Thus analyzing ‘how’ as a head leads to highly unsatisfactory results, defeating the last remaining alternative analysis (17iv). We conclude that downwards probing is the best tool for analyzing agreeing ‘how.’ This being the case, it cannot be that all agreement in natural language is Spec, head (*contra* Koopman 2000; 2006); or (as argued above) that Lubukusu is parametrically committed to upwards Agree *contra* Baker (2008) and Diercks (2011a).

6.4 Against phase heads as the only sources of uPhi

6.4.1 General problems

Properties of agreement in Bantu languages raise difficulties for the Feature

Inheritance (FI) approach to agreement proposed in Chomsky (2007, 2008) and

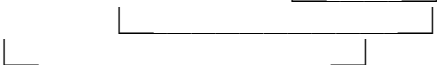
Richards (2007). Richards writes, “[i]t thus follows from the SMT [Strong Minimalist

Thesis] that uninterpretable (unvalued) features can only be a property of phase heads, that is, those heads that trigger Spell-Out/Transfer” (Richards 2007: 567). Phase heads hand down probe features to the heads of their complements because “value and transfer of uFs must happen together,” or else there would be no way to distinguish valued uFs from interpretable features at the Conceptual-Intentional (C-I) interface (Richards 2007:566).

It is well-known that clauses in many Bantu languages can include multiple SA, and that in the same clause C can agree with a *wh*-phrase (see (73)). The FI approach requires that phasal and non-phasal heads interleave, and as a consequence we should see alternations of agreeing and non-agreeing heads. In studies of many Bantu languages the predicted interleaving is not attested.

- (73) Siina ni-syo a-kha-be ne-a-khola?
 7what COMP-7 3sgSA-FUT-be NE-3sgSA-do
 ‘What will s/he be doing?’ (Lubukusu; Wasike 2007: 342)

Building on the analysis of Carstens (2001, 2005) (73) can be represented schematically as follows (lines indicate agreement relationships between an aspectual affix and the subject; between T and the subject; and between C and the operator).

- (74) OP C_{uPhi} SU T_{uPhi} V+v+Asp_{uPhi} ~~OP~~ SU ...

Asp agrees with the subject
T agrees with the subject
C agrees with the operator

There is no independent evidence that Lubukusu has phase heads which are absent in English, intervening between C and T, and between T and Asp. Carstens (2010a) argues based upon problems of this kind that the conclusions of Chomsky and

Richards must be abandoned. Epstein, Kitahara and Seely (2010; henceforth EKS) provide compelling arguments from English against the Chomsky/Richards approach (among them the presence of valued uCase at the phase edge on *whom* in *Whom do they like?* and valued uPhi on *v** in *They like him*). EKS propose that uFs are recognizable as such throughout the derivation and simply ignored at C-I. As long as valuation precedes transfer to PF so that uFs can be pronounced, they are licit on any head. This proposal has much to recommend it and we adopt it here.

6.4.2 Agreeing 'how' and the origin of probe features

The facts of agreeing 'how' reinforce these general conclusions. Since 'how' is adjoined to vP, it cannot undergo transfer with the VP complement of *v*; it is part of the higher CP phase. Thus under the Chomsky/Richards view that only phase heads introduce probe features, it would follow that uPhi of *T*, *Asp*, and 'how' all originate on *C*. The mismatches between SA on *T* /*Asp* and agreement on 'how' can only be accommodated under Feature Inheritance theory if *C*'s features can be duplicated, distributed to the various agreement bearers including 'how', and allowed to agree with different expressions (see (75)).

- (75) a. C_{uPhi} [TP T [vP [vP v [VP SU V LOC]] How]] *C introduces the sole uPhi*
- b. C [TP T_{uPhi}...[vP [vP v [VP SU V LOC]] How_{uPhi}]] *T and 'how' inherit C's uPhi*
- c. C [TP T_{uPhi}...[vP [vP v [VP SU V LOC]] How_{uPhi}]] *'How' agrees with the subject
T agrees with the locative*
-

For the FI approach to work in Lusaamia and Lubukusu, therefore, it seems there can be no constraints placed on the number of heads over which copies of *C*'s uPhi

can be distributed (since additional agreeing aspectuals could multiply the items sharing copies of C's uPhi bundle to 3 or 4).³² There would also need to be no constraint prohibiting the features of copies from diverging: once C's uPhi are distributed, each copy would have to be entirely independent in terms of ultimate feature values. There can accordingly be no way to verify whether or not a given instance of agreement has any relation to C, since it can appear on any expression in the phase that lacks iPhi, and agree with whatever DP is local to it. Thus we seem to arrive at a system that cannot be falsified by any empirical facts of agreement. We consider this a fatal flaw and put the approach aside.

6.5 An agreement theory that works for agreeing 'how'

The tools to explain why Bantu languages, but not English, should allow an expression like 'how' to agree are available in Chomsky (2001), particularly in the "activity" requirement.

(76) The Activity Requirement: each participant in an Agree relation must have an unchecked uninterpretable feature (uF).

While the sole uF activating goals in English A-relations is uCase, Carstens (2010a, 2011) proposes that the grammatical gender of nouns (a component of noun class; see note 1) is a meaningless formal feature, hence uninterpretable (see also Zamparelli 2008 and Bošković to appear); as such, it makes its bearer "active" as a goal for Agree. This property is clearly demonstrated in the familiar phenomenon of concord within noun phrases. It is a well established cross-linguistic pattern that if

nouns have grammatical gender (henceforth uGen), many modifiers may agree with them (see (77), from Carstens 2011).³³

- (77) a. *la maison vert-e* [French]
the.FS house(F) green-FS
'the green house'
- b. *kiatu ch-angu ki-dogo* [Swahili]
7shoe 7-my 7-small
'my small shoe'

What concord also makes clear is that when a noun's uGen is goal in an Agree relation, no "deactivation" effect occurs. In other words, the same noun can value concord on a number of items inside the DP as shown in these examples. In this respect concord contrasts sharply with English SA. Based on facts like (78), Chomsky (2001:6) writes, "Once the Case value is determined, N no longer enters into agreement relations and is 'frozen in place.'"

(78) *He seems ___ has left.

To account for this contrast between uCase and uGen as active goal features, Carstens (op cit) proposes that deactivation accompanies valuation of a DP's uCase because further Agree relations have the potential to tamper illicitly with the value determined in the initial Agree, leading to a PF crash based on unclarity regarding how uCase is to be pronounced. This problem does not arise for iterating Agree where N's uGen is the active goal feature, because N's uGen enters the syntax with a value rather than acquiring it via Agree (see Pesetsky & Torrego 2007 on the logical independence of interpretability and value, and Bošković to appear for similar ideas on gender in Serbo-Croatian, though somewhat different in implementation).

Returning to the issue of the abundant clause-level agreement in Bantu languages, Carstens points out that in all cases it shares with concord the inclusion of grammatical gender features. This in turn follows, in Carstens's proposals, from the fact that nouns in Bantu languages raise and adjoin to D, making N's uGen uniformly accessible to clause-level probes like T and C. Because of N-to-D, Bantu languages contrast with Romance languages which also have uGen; its effects as an activity feature in Romance are seen only inside the noun phrase because Romance lacks N-to-D (compare (79) with (80)-(81), from Carstens 2011).³⁴ The sole exception to this pattern of Romance agreement is gender agreement on participles which, significantly, are lexically insensitive to D's person feature. Carstens argues that [person] intervenes blocking access to N's gender for any probe outside the DP with sensitivity to [person], absent N-to-D.³⁵

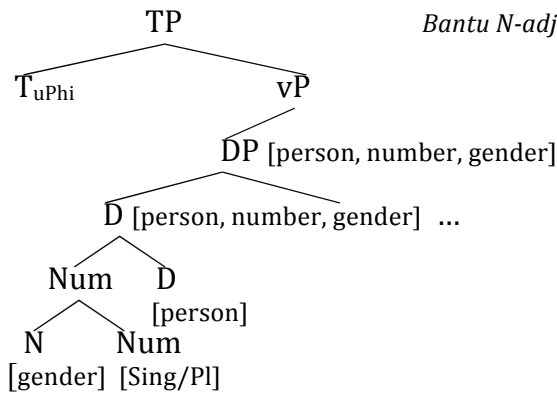
(79) a. la mia casa [Italian; see Cinque 1994]
 the my house
 'my house'

b. [DP la [FP mia casa [NP t_N]]]

(80) a. nyumba yangu nzuri [Swahili; Carstens 1991]
 house my nice
 'my nice house'

b. [DP nyumba+D [FP yangu t_F [NP nzuri [NP t_N]]]]

(81) *Bantu N-adjunction to D leads to inclusion of gender in SA when uPhi of T probes DP*



The proposal that nominal gender is never deactivated explains a broad range of constructions in Bantu languages where on standard assumptions a DP should cease to agree and move, but in fact does not.³⁶ Carstens refers to these phenomena as ‘hyperagreement’ and ‘hyperactivity.’ Diercks (2012) adds the proposal that some or perhaps all Bantu languages lack uCase altogether, so uGen is the sole activity feature.

With uGen providing inexhaustible “activity”, any DP in a Bantu language with the relevant properties (noun class and N-to-D) can serve as goal in an infinite series of Agree relations. Thus a subject can value agreement on ‘how’, on an aspectual, on T, and if extracted, on C. Similarly, fronted DP_{loc} can value the features of the locative clitic and move on to a second Agree relation with T and/or C as we will see in §7.

Summing up, a principled explanation for differing cross-linguistic patterns of agreement is not available in the framework of Chomsky (2007, 2008), but the approach of Chomsky (2001) yields a nicely predictive system once the roles of grammatical gender and N-to-D adjunction are taken into account. Under this

approach to agreement, the co-occurrence of ‘how’ agreement and SA with a single expression is not a problem at all.

6.6 On the status of ‘how’ and probing by uF of XP

As a vP adjunct, we assume that ‘how’ is an XP – perhaps an adverbial phrase like many manner adjuncts (*very quickly, forcefully, etc.*).³⁷ A question arises as to whether this is inconsistent with the proposal that the c-command domain of its uPhi is vP.

There is certainly a recent tradition of assuming that uFs must obtain values from within the c-command domain of the head that bears them, and that if this does not happen, the derivation cannot continue. Chomsky (2000:132) writes,

“Properties of the probe [...] must be exhausted before new elements of the lexical subarray are accessed to drive further operations.”

A logical corollary of this statement is that only (features of) heads can probe.

But there is also quite a bit of evidence that this view is misguided. Consider the status of uCase on a DP. Based on the fact that uCase is an unvalued, uninterpretable feature, it meets the definition of a probe in Chomsky’s system. It should therefore probe its c-command domain and, if a match is not available there, the above quote from Chomsky (2000) leads to the expectation that the derivation should abort, yet it does not. According to Carstens 2012, this fact gives rise to a stipulation that uCase has the status of a “goal” feature, but in reality there is no principled basis for the probe-goal distinction among uFs.

Epstein & Seely (2006), Boskovic (2007, 2011), and Carstens (2012) accordingly argue that uCase features are in fact probes. Epstein & Seely (op cit) and Boskovic (op cit) argue that A-movement exists so that a DP can c-command a source of Case-valuation. Carstens (2012) adds that the defining property of “goal” features is that they are probes which find nothing relevant in their c-command domains at first Merge (we illustrate this for uCase of D in (82) and (83). Following Boskovoc 2011 and Carstens 2012, an abstract Case “assigner” has uninterpretable but valued Case features; thus T has uNom).³⁸

(82) [DP D_{uCase} ] *Upon merge, D's uCase cannot be valued*

(83) [TP DP_{uCase} [T' T_{uNom} [vP <DP_{uCase}> [v' v ...]]]] *Raising of DP values uCase of D(P)*

See also Bobaljik & Wurmbrand (2005) for important evidence that nominative valuation works this way in some but not all syntactic contexts in German, based on several options for obtaining what Carstens (2012) calls DELAYED VALUATION.

Carstens (2012) argues that any uF of a head X which cannot obtain value in the complement of X are inherited by XP, because the features of X form XP's label. uF of XP can therefore probe XP's c-command domain and, so long as uF is valued before phasal transfer, the derivation can converge. Carstens (op cit) argues that this is how uPhi of adjectives within APs are valued by N:

- (84) a. la muchacha [muy bonita] [Spanish]
 the.fem girl.fem very pretty.fem
 'the very pretty girl'
- b. une voiture [plus vite] [French]
 a.fem car.fem more fast.fem
 'a faster car'

(85) a. [_{AP} muy bonit_{uPhi} ...]
 A's uPhi

AP contains no source of valuation for



b. [_{NP} [_{AP_{uPhi}} muy bonit_{uPhi}] [_{NP} N_{iPhi}]]
 z-----m

uPhi of A become features of AP, and probe N

Returning to the analysis of agreeing 'how', we conclude that it makes up the sole content of an adjunct XP (just as English *how* is generally taken to be the sole content of an adjunct XP). uPhi of 'how' is valued by probing the c-command domain of this XP, hence probing vP.

7. Inversion, locality, and agreeing 'how'

7.1 Introduction

In the preceding sections we have analyzed agreeing 'how' as a vP adjunct with uPhi. We have shown that this proposal nicely accounts for agreement phenomena associated with several kinds of non-canonical subjects including expletives, fronted locatives, and operators. Several potential locality problems associated with LI constructions are readily explained by assuming two merge options for selected locatives in unaccusative constructions (see discussion of (58) and (59) in §5.4.2), and by adopting Merge-over-Move (see Chomsky 1995, 2001 and discussion of (62)). Some additional locality puzzles arise, however, in connection with agreeing 'how' and LI.

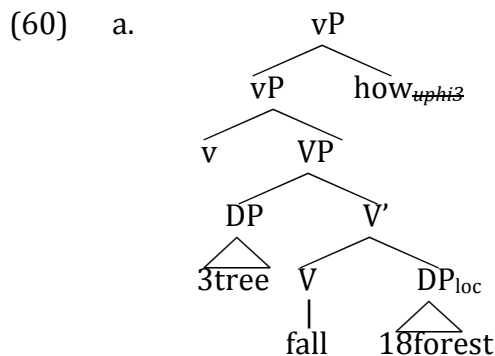
First, it is interesting to note that the thematic subject doesn't systematically block raising of DP_{loc}: this is a classic conundrum of inversion constructions often addressed in terms of material in VP being equidistant from outside probes (cf. Chomsky 1995, Collins 1997, Ura 1996). But the fact that agreement on 'how' is

subject to strict locality rules out equidistance of arguments in VP as an explanatory mechanism. We will argue that DP_{loc} is probed and raised to Spec of the locative clitic that appears on the verb whenever a locative is fronted. Because the clitic is sensitive only to locatives, the subject is irrelevant to its search.

This proposal explains why the subject does not block raising of DP_{loc} , but it leads to a second locality question: if DP_{loc} transits through an intermediate position, we need to explain why it does not block raising of the subject to Spec, TP in the DALI construction. We relate this to A'-opacity effects in a range of other languages.

7.2 Why the subject doesn't block raising of the locative

Recall our proposal that the expression valuing 'how's $u\Phi$ does so because it is the highest DP in vP and hence most local to 'how'. When 'how' and T agree with different expressions, a locality puzzle therefore arises: surely the expression closest to 'how' is closest to T as well (see (60a), repeated below). Why then, when 'how' agrees with the logical subject in a RALI construction like ((51a) repeated below), is it possible for T to probe and raise DP_{loc} ?



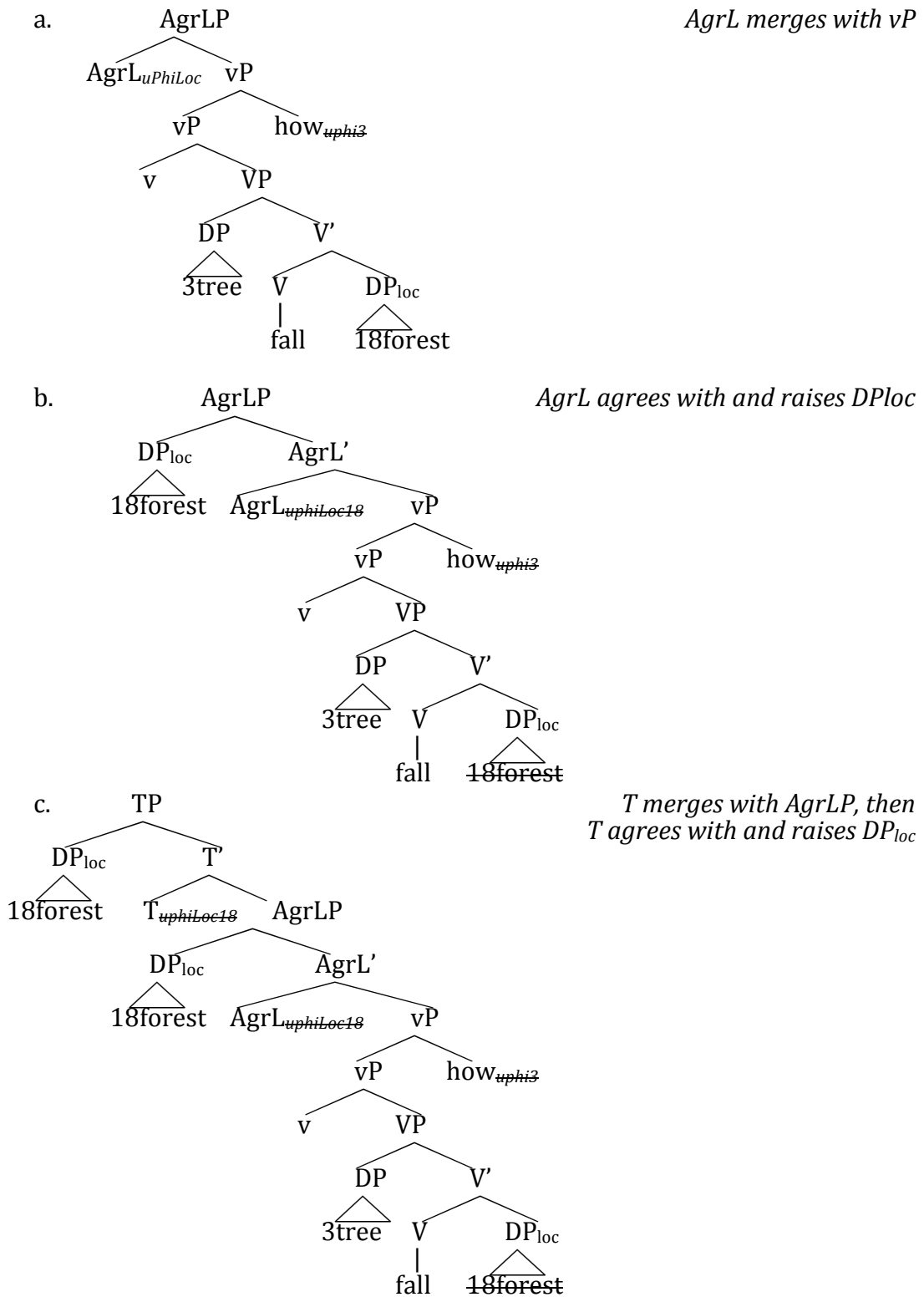
(51) a. **Mu**-mu-siiru **mw**-a-kwa-**mo** ku-mu-saala ku-rie / ***mu**-rie? *RALI*
 18-3-forest 18SA-PST-fall-18L 3-3-tree 3-how / *18-how
 'How did a tree fall in the forest?' (Lit: In the forest fell a tree how?)

A likely explanation for this phenomenon lies in the special locative clitic that always and only agrees with locatives when left-dislocated (86b), raised to Spec, CP (86d) or occupying Spec, TP (86c); but never with in situ LOCs (86a) (cf. Diercks 2011a,b).

- (86) a. *Ku-mu-saala kw-a-kwa-**mo** **mu**-mu-siiru. *in situ LOC*
 3-3-tree 3SA-PST-fall-PST-18L 18-3-forest
 ‘A tree fell in the forest.’
- b. **Mu**-mu-siiru, ku-mu-sala kw-a-kwa-*(**mo**). *Left-dislocated LOC*
 18-3-forest 3-3-tree 3S-PST-fall-PST-18L
 ‘In the forest, a tree fell.’
- c. **Mu**-mu-siiru **mw**-a-kwa-*(**mo**) ku-mu-saala. *RALI*
 18-3-forest 18SA-PST-fall-PST-18L 3-3-tree
 ‘In the forest fell a tree’
- d. **Mu**-mu-siiru kw-a-kwa-*(**mo**) ku-mu-saala. *DALI*
 18-3-forest 3SA-PST-fall-18L 3-3-tree
 ‘In the forest fell a tree.’

We adopt Diercks’s (2011a) proposal that this clitic heads a syntactic projection in the middle field of the clause,³⁹ which he dubs AgrLP. The clitic probes for and agrees with DP_{loc}. Because its uPhi is sensitive only to locatives, intervening non-locative DPs are irrelevant to its search (see Rizzi 1990 and Preminger 2011 on effects of this kind, and discussion in §7.3.4). We depart from Diercks’ account in proposing that the clitic has an edge feature⁴⁰ which raises DP_{loc} to Spec, AgrLP where it is closest to uPhi of T.⁴¹ Note that DP_{loc} is not deactivated or “frozen in place” after this Agree relation with the locative clitic; it remains active to agree with T for the reasons sketched out in §6.5.

(87) RALI, Variety A: 'how' agrees with SU; T and the locative clitic with DP_{loc}



But now a different locality question arises: if fronted locatives move to Spec, AgrLP, how can T ever agree with the thematic SU in a LI construction, as in the case in DALI? ⁴²

7.3 Why the locative in Spec AgrLP doesn't block raising of the subject

7.3.1 The problem

The preceding section explained the absence of an intervention effect for T probing a locative phrase that begins lower in the structure than the subject of the unaccusative RALI construction: we argued that the special locative clitic heads a projection mid-way between T and vP, and that it probes and raises all and only extracted or inverted locatives to an intermediate position between T and the thematic subject. Once DP_{loc} is in that position, T can probe and raise it to Spec, TP, yielding the construction we call RALI:

- (88) a. T [AgrLP DP_{loc} AgrL [vP V [VP SU...~~DP_{loc}~~]]] →
 b. [TP DP_{loc} T [AgrLP ~~DP_{loc}~~ AgrL [vP V [VP SU...]]]]

Under these assumptions, both unaccusative and unergative DALI constructions raise a new locality puzzle. Recall that in DALI constructions, T and 'how' agree with the thematic subject, but the locative clitic agrees with the inverted locative phrase. The pattern is exemplified for an unaccusative and an unergative in (38a,b), repeated below:

- (38) a. **Mu**-mu-siiru kw-a-kwa-**mo** ku-mu-saala. *Disjoint Agreement LI*
 18-3-forest 3SA-PST-fall-18L 3-3-tree *Unaccusative*
 'In the forest fell a tree.'
- b. **Mw**-iloo e-sun-ile-**mo** e-nduyu.
 18-5hole 9SA-jump-PST-18L 9-9rabbit *Unergative*
 'Into the hole jumped the rabbit.'

Recall also that DALI constructions have the (partial) structures in ((41a,b) repeated below), where the landing site of DP_{loc} is Spec, CP and that of the logical subject is Spec, TP.

- (41) **Disjoint agreement LI (DALI):** *Thematic SU to Spec TP; DP_{loc} to Spec, CP*
- a. $[_{CP} LOC \ C-T-V-V [_{TP} SUBJ \bar{T} [_{VP} \bar{v} [_{VP} SUBJ \bar{v} LOC]]]]]$ *unaccusative*
- b. $[_{CP} LOC \ C-T-V-V [_{TP} SUBJ \bar{T} [_{VP} SUBJ \bar{v} [_{VP} \bar{v} LOC]]]]]$ *unergative*

Updating these representations to reflect the hypothesized intermediate positions of the operator DP_{loc} including Spec, AgrLP yields (89) for unergative and (90) for unaccusative DALI constructions. Notice that the surface position of SU is separated from its base position by the intermediate occurrences of DP_{loc} .⁴³

(89) *OK* $[_{CP} DP_{loc} V-V-T-C [_{TP} SUBJ \bar{T} [_{AgrLP} DP_{loc} AgrL [_{VP} DP_{loc} [SUBJ \bar{v} [_{VP} \bar{v} DP_{loc}]]]]]]]]$

(90) *OK* $[_{CP} DP_{loc} V-V-T-C [_{TP} SUBJ \bar{T} [_{AgrLP} DP_{loc} AgrL [_{VP} \bar{v} [_{VP} SUBJ \bar{v} DP_{loc}]]]]]]]]$

In a DALI ‘how’ question, then, an intriguing locality puzzle arises in connection with SA and subject raising to Spec, TP: why doesn’t DP_{loc} block Agree (T, SU)?

This issue may seem at first glance to arise as a consequence of our proposal that the locative clitic probes and raises DP_{loc} to the intermediate Spec, AgrLP. But in fact the problem exists independently of that. Let us consider in closer detail the intermediate stage in the derivation of an unergative DALI construction before AgrL is even merged, as depicted in (91). Assuming phasal v raises DP_{loc} to its Spec en route to Spec, CP, DP_{loc} constitutes an expression with *iPhi* features closer any external probe than the subject. Even if AgrLP were not present, a question would arise as to how and why T ignores DP_{loc} .

(91) ..._{[VP DP_{loc} [_{VP} SUBJ V [_{VP} V DP_{loc}]]]}

unergative DALL, intermediate stage

Even at this point in the derivation, then, before AgrL is involved, strict locality might lead us to expect DP_{loc} to intervene and prevent T raising or agreeing with the logical subject.

The problem described here is not by any means a novel one restricted to the analysis of Bukusu locative constructions. (91) is no different in principle from the configuration that arises in *wh*-questioning of an English non-subject. We illustrate with a case of object extraction in (92) (transferred material is again shaded); see in particular the intermediate stage (92b)). The thematic subject can (and in fact must) be raised to Spec, TP across an intervening operator bound for Spec, CP in a *wh*-question of this kind. Explaining such phenomena in a way consistent with other evidence of strict locality in movement and agreement is a recurring issue in Minimalist syntactic theory.

(92)	a.	Who did John see?	<i>an object question</i>
	b.	T [_{VP} DP _{OB} [_{VP} SUBJ V [_{VP} V DP _{OB}]]]	<i>intermediate stage</i>
	c.	[_{CP} DP _{OB} C [_{TP} Subj T [_{VP} DP _{OB} Subj v]]]	<i>end of CP phase</i>

7.3.2 Towards a solution

It has often been argued in relation to this issue that a chain including both A- and A'-positions is "improper" (for helpful recent discussion and review of the literature on this question see Obata & Epstein 2011; see also Rezac 2003, Svenonius 2000, Chomsky 2008 among many others). We express this idea in (93) with a constraint that relates the invisibility of the locative operators in (89) – (91) to the object operator's non-intervention in (92) when T is probing – a state of affairs that Rezac

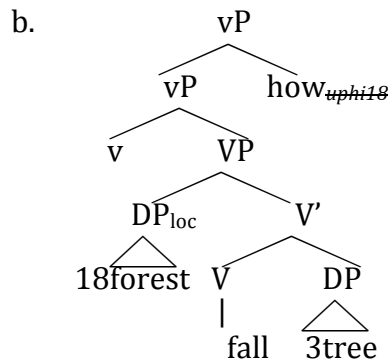
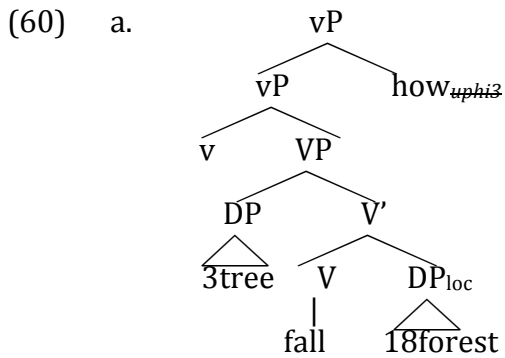
(2003) aptly refers to as A'-opacity.⁴⁴ We discuss some approaches to deriving (93) in §7.4.⁴⁵

(93) **Prohibition on Mixed Chains:** Expressions in A' positions are inaccessible to A-relations.

Our formulation in (93) is intended to avoid problems of look-ahead since it refers to A' positions only. We follow Chomsky (2008) in defining an A'-position as a one created by the edge feature of a phase head, and assume that there are phasal and non-phasal versions of AgrL. The phasal AgrL feeds A'-movement of DP_{loc} to Spec, CP in DALI constructions because it permits T to probe the subject.⁴⁶ Spec of the non-phasal AgrL is not A'-opaque – T cannot probe over it; hence non-phasal AgrL can only feed RALI constructions.

(93) is also formulated to be compatible with participation of operators in A-relations prior to extraction,⁴⁷ which is important given that they can value SA in a question like *Who likes coffee?* or acquire a Case value as in *Whom did you see?*

Lubukusu LI constructions provide some novel evidence of the visibility of in situ operators for A-relations. Recall from §5.4.3 that T cannot probe SU when DP_{loc} is merged higher than SU. The relevant configuration is the unaccusative VP in (60b), proposed because for our third speaker, 'how' could agree with either SU or with DP_{loc} in RALI constructions. To account for his pattern of judgments we proposed that in the dialect of speaker #3, unaccusative VPs have the structural ambiguity shown in (60a,b) repeated below.



Now notice that in the hypothetical derivation of an unacceptable DALI continuation from (60b), DP_{loc} would surface in Spec, CP; hence it is an operator in an A' position (see (94)).

(94) $*[_{CP} DP_{loc} V\text{-}v\text{-}T\text{-}C [_{TP} SUBJ \bar{T} [_{AGRLP} DP_{loc} AgrL [_{VP} v [_{VP} DP_{loc} \bar{V} SUBJ]]]]]$
Unacceptable unaccusative DALI construction based on (60b)

The contrast between the impossible derivation for DALI in (94) and the licit ones in (89) and (90) (repeated below) argue that there is no A-opacity effect for the DP_{loc} operator in its base position. Only its intermediate occurrences are successfully ignored by T when T probes.

(89) *OK* $[_{CP} DP_{loc} V\text{-}v\text{-}T\text{-}C [_{TP} SUBJ \bar{T} [_{AGRLP} DP_{loc} AgrL [_{VP} DP_{loc} [SUBJ v [_{VP} \bar{V} DP_{loc}]]]]]]$

(90) *OK* $[_{CP} DP_{loc} V\text{-}v\text{-}T\text{-}C [_{TP} SUBJ \bar{T} [_{AGRLP} DP_{loc} AgrL [_{VP} v [_{VP} SUBJ \bar{V} DP_{loc}]]]]]]$

It has been noted elsewhere that operators in their landing sites can be invisible to A-probing, like their intermediate occurrences are here. Consider (95), from Svenonius (2000). Svenonius (op cit) provides a number of arguments that the clause-medial negative expression in the Icelandic (94) is an A' operator. It is therefore significant that the subject can move to Spec, TP across it, indicating that the relationship (T, SU) succeeds though the null hypothesis is for the negative expression's phi-features to be relevant to T's search.⁴⁸

(95) Strákarnir₂ höfðu [engu grjóti]₁ [vP t₂ [VP hent t₂ í bílana]].
 the-boys had no rock thrown in the-cars
 'The boys had thrown no rocks at the cars.' (Svenonius 2000)

Together the facts of (94), (89), (90), and (95) confirm that while an operator in its base position is visible in A-relations, once it has moved this visibility ceases. Thus the formulation in (93) (repeated below) predicts all the facts.

(93) **Prohibition on Mixed Chains:** Expressions in A' positions are inaccessible to A-relations.

When T probes in (94) it finds an occurrence of DP_{loc} in its merge position, higher than SU. This occurrence is not in an A' position. The desired result is obtained: (60b) cannot feed a DALI construction because T cannot probe SU across DP_{loc} in the VP of (60b). In all cases, however, T will ignore intermediate occurrences of DP_{loc} in an A'-position. The one instance when T does not ignore an intermediate occurrence of DP_{loc} is in RALI constructions, where T is able to probe DP_{loc} instead of the thematic subject precisely because DP_{loc} has moved to Spec of non-phasal AgrL (as discussed in §7.2). Thus non-phasal AgrL feeds RALI because its Spec is not an A'-

position and therefore the raised DP_{loc} can be probed by T, but phasal AgrL only feeds DALI, as a DP_{loc} raised to Spec, AgrL in that case is subject to A'-opacity.

As pointed out in footnote 44, the Prohibition on Mixed chains in (93) also allows us to explain why 'how' and AgrL are not sensitive to A/A' differences in their goal. AgrL and 'how' probe expressions in their base positions, where A'-opacity is not a factor.

7.3.4 Summary and remarks

We have argued that apparent locality paradoxes in LI constructions have two primary sources. First, A-movement of DP_{loc} across the thematic subject is mediated by the locative clitic. The subject is irrelevant to its search because the clitic is sensitive only to locative material. We argued that the clitic has both $u\Phi$ and an edge feature (we argued in §6 that uF probe features are not properties of phase heads alone, contra Chomsky 2008).

The second apparent locality paradox we considered was the ability of T to probe the subject across the intervening DP_{loc} in DALI constructions. We argued that this is because in DALI DP_{loc} is an operator and hence the positions it moves through are A' positions; A-probing typically ignores the contents of A' positions. The structure in (91) showed that the initial locality issue in unergative DALI constructions is essentially the same as those of object operator constructions more generally in that both of the potential goals for Agree relations are at the edge of the vP phase, as shown in (92). But if we are correct about the role of AgrL in locative inversions, then DALI constructions in Lubukusu provide some novel evidence that

A-probing can reach over intervening operators even across a significant structural divide. (96) represents DALI with an unaccusative verb (such as in (38a), repeated below), where the subject is internal to VP, and T nonetheless successfully probes and raises it across the locative in Spec, AgrL.

(38) a. **Mu**-mu-siiru kw-a-kwa-**mo** ku-mu-saala. *Disjoint Agreement LI*
 18-3-forest 3SA-PST-fall-18L 3-3-tree *Unaccusative*
 'In the forest fell a tree.'

(96) $T_{probe} \dots [_{AGRLP} DP_{loc} \text{ AgrL } [_{VP} v [_{VP} \text{ SUBJ } V \text{ DP}_{loc}]]]$

DALI constructions in Lubukusu thus suggest that A'-opacity is not attributable to local or parochial properties such as the hypothesis of equidistance among multiple specifiers of a single head (Ura 1994, 1996).

The Prohibition on Mixed Chains in (93) also provides insight into why unergative verbs cannot participate in RALI constructions. Since ergative vP is phasal, DP_{loc} cannot escape it without first moving to an outer Spec, vP. Given that this is an A' position, T will never be able to probe DP_{loc} there. Hence unergatives are restricted to DALI constructions.

7.4 Approaching A'-opacity

Locality paradoxes like (89)-(92), and hence A'-opacity effects more generally, are independent of the analysis of agreeing 'how', and so in principle a variety of approaches to them might well be compatible with the analysis of 'how' presented in this paper. It is worth noting, however, that the Luyia phenomena present some special challenges.

Two prominent analyses of A'-opacity propose that it arises because the phi-features of an operator (henceforth OP and iPhi; i = intrinsic) cease to be visible before the point where T probes. Rezac (2003) argues that an Agree relation encapsulates the goal in a KP shell of functional structure. Once features have been encapsulated, nothing further can probe them. Obata & Epstein (2011) argue that A'-opacity arises for an English object OP because of 'feature splitting': in Agree (v, OB), uCase and iPhi features move to v, leaving OP with just the Q-feature relevant in A'-relations (see (92a) repeated below, and (97)).

(92) a. Who did John see? *an object question*

(97) *Obata and Epstein's Feature Splitting*

a. v [_{VP} V who_{[uCase][iPhi] [Q]] *little v probes the object 'who'*}

b. [_{VP} who_[Q] [_{VP} SUBJ v [_{VP} V who]]] *at the phase edge, English 'who' no longer has iPhi or uCase*

Luyia raises novel problems for both of these approaches because it exhibits A'-opacity, but its operators control agreement. Hence iPhi of OPs must be syntactically visible. We can see this in (98), where a locative OP first values uPhi of the locative clitic and subsequently uPhi of the complementizer in a cleft (subscripted numbers are noun classes).⁴⁹ T is able to probe the subject across the operator nonetheless, as (99) demonstrates.

(98) **mw**-a-ba **mu**-nju ni-**mwo** ba-ba-ana ba-a-funa-**(mo)** lu-u-saala.
 18SA-PST-be 18-house COMP-18 2-2-child 2SA-PST-break-18L 11-11-stick
 'It was in the house that the children broke the stick.' **Locative Cleft**

(99) [_{CP} OP₁₈ C_{uPhi18} [_{TP} SU₂ T_{uPhi2} [_{AgRP} OP₁₈ AgrL_{uPhi} [_{VP} OP₁₈ SU₂ V [_{VP} V OB...]]]]]

In (98), OPs phi-features are active to value agreement on AgrL and C, but T successfully probes and raises the subject nonetheless

(100) demonstrates the same sort of phenomenon for an object operator: it values agreement on C of the cleft. This shows that OP's iPhi are visible and active. Yet A'-opacity obtains nonetheless; T agrees with the thematic subject, raising it to Spec and adopting its Phi-values in SA (see (101)).

(100) **lw**-a-ba **lu**-u-saala ni-**lwo** ba-ba-ana ba-a-funa.
 11SA-PST-be 11-11-stick COMP-11 2-2-child 2SA-PST-break
 'It was the stick that the children broke.' **Object Cleft**

(101) [_{CP} OP₁₁ C_{uPhi11} [_{TP} SU₂ T_{uPhi2} [_{VP} OP₁₁ SU₂ V [_{VP} V OP₁₁]]]]

In (100), the object OP retains its phi-features to value agreement on C, but T successfully probes and raises the subject nonetheless.

We conclude that A'-opacity cannot be attributed to inaccessibility of OP's iPhi, at least in Luyia; assuming a unitary approach is desirable, the solution must be sought elsewhere.

It seems to us that a promising factor in approaching opacity effects is the selectivity of probe features that this investigation has uncovered. Compare 'how' and AgrL, both of which probe with uPhi. As we have seen, uPhi of AgrL ignores iPhi of a non-locative DP, whereas 'how' must agree with the closest DP to it. The fact that T can ignore operators in A' positions seems to us to align it with AgrL: the conclusion suggested is that T's uPhi probe is not a "pure" one like that of 'how', but one of greater specificity like AgrL's.

In some “inverse Case filter” analyses, T has a probe feature that we can think of as uNom linked to its uPhi (see (102)). This seems to us one possible angle on A'-opacity.⁵⁰

(102) $T_{uNom;uPhi} [VP OP_{iPhi; uCase} [VP SUB]_{iPhi uCase} V [VP V \cancel{OP}]]]$
T ignores OP, looking for unvalued uCase

Something along these lines seems to have potential to explain the selectivity with which T probes, ignoring the intervening operator's occurrences in A' positions.⁵¹

Much about the role of Case in Bantu languages is unclear, however, and we are unable to do the topic justice here for reasons of length (see note 27 on the restriction of Luyia LI to intransitives, and on the other hand Diercks 2012 and references cited therein for arguments that Case plays no role in many Bantu languages). Adapting an idea from Rizzi & Shlonsky (2007), an alternative might be to suppose that T's probing involves a feature connected, at least historically, with discourse or information packaging (topic/comment; theme/rheme structure); and incompatible with the focus-properties of operators encoded in their Q feature.

Bundled with T's uPhi, the relevant feature (labeled uD in (103) for its possible discourse origins) causes T to ignore the operator-in-transit when seeking a goal.⁵²

(103) $T_{uPhi;uD} [VP OP_{iPhi;Q} [VP SUB]_{iPhi} V [VP V \cancel{OP}]]]$
T ignores OP because of incompatible search specification

Both (102) and (103) lead to questions outside this paper's scope about the impossibility of T probing/raising SU across a locative merged higher than SU in the VP (see discussion of (60b) in §5.4.3 and §7.3.3.).

We leave it to future research to find the best explanation for A' opacity. We conclude only that it is unexpected for OPs with active iPhi on the analyses discussed, and that sensitivities of T's probe features seem a promising direction to look for insight.⁵³

8. Summary and conclusions

In this paper we have described the properties of agreeing 'how' in the Luyia language Lubukusu. We have shown that it is neither a floating modifier nor a *wh*-subject depictive. It questions kinds of events and hence is non-referential and [-N]. In Bantu languages, by and large, expressions lacking intrinsic phi-features generally acquire them via Agree and this is true of Luyia 'how.' Relying on evidence from expletive subjects, subject questions, locative inversion constructions, we proposed that agreeing 'how' is merged as a *vP* adjunct with *uPhi* which probe the subject in its base position independently of T's *uPhi*, based on evidence that 'how' and T can agree with different expressions in inversion constructions, or in different features with the same expression (subject operators).

This conclusion has important consequences for various aspects of syntactic architecture. First, it argues that downward probing is a better tool for analyzing agreement in Lubukusu than are upward agreement and Spec-head agreement, neither of which can adequately account for the facts of agreeing 'how'. Second, it poses a strong challenge to the Feature Inheritance model, which claims that all probes originate on phase heads. Like many other facts in Bantu languages, the

evidence of ‘how’ suggests that probe features are licit on any expression, providing they obtain values before Transfer to PF for Spell Out.

This paper also makes an original contribution to the study of inversion phenomena, and locative inversion in particular. Looking at ‘how’ questions in locative inversion sentences, we showed that the two expressions in an LI construction are not actually equidistant from probes outside of VP (see footnote 41). A pure uPhi probe like ‘how’ identifies the highest DP in the VP. For the lower DP to invert, undergoing A-movement to Spec, TP, a special strategy is required to get it across the higher one; in Lubukusu, this strategy comes in the form of raising to Spec, AgrL.

The interaction of ‘how’ and inversion provide some novel evidence on the topic of A’ opacity since they show that locative (and other) operators in Lubukusu have and retain phi-features throughout the derivation but are nonetheless opaque to probing by T. We have made a tentative suggestion relating this to the contrasting behavior of ‘how’ and AgrL as uPhi probes, arguing that even probes sensitive to the same basic sorts of features can differ in selecting different subsets of them (and perhaps selecting them in combination with other features), with consequences in terms of what constitutes an intervening expression in a relation otherwise constrained by closest c-command.

Agreeing ‘how’ is one among many systematic cases that have been reported in the Bantu syntax literature where a single DP participates in multiple Agree relations: alongside of multiple agreement in compound tense constructions and

operator constructions, syntactic theory must also recognize that a DP can value agreement on 'how' and the locative clitic. The phenomenon is well-established (see Carstens 2001, Henderson 2007 among many others), and is related to very broad-reaching claims about the nature of DP-licensing in human language (see Diercks 2012, Carstens 2010a, 2011, and the summary in §6.5).

Our analysis also provides yet another addition to the many existing arguments for a low base position for clausal subjects (see Kratzer 1996 and many others).

Finally, the position and agreement properties of 'how' provide an interesting and compelling argument that height and 'leftness' do not correlate, contra Cinque (2005) and Kayne (1994). In particular, the facts of agreement on 'how' strongly argue that it is merged higher than vP material to its left. This being the case, it cannot be true that syntactic hierarchy maps consistently and universally into left-to-right linear order.

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*The basic Lubukusu ‘how’ facts were first described in Wasike’s (2007) dissertation. Thanks to Dennis Odalloh for Lusaamia data and to Justine Sikuku, Lillian Jivetti, and Aggrey Wanyonyi for Lubukusu data. For helpful discussion and comments on this material our thanks to Daniel Seely, Juvenal Ndayiragije, Meredith Landman, Justine Sikuku, Brent Henderson, members of our audience at the 2011 Bantu 4 conference, and two anonymous LI reviewers.

¹We use ‘X agrees with Y’ to mean that intrinsic features of Y are reflected on X -- not the converse. In glosses, SA=subject agreement; cardinal numbers (1-3) denote person features when they are accompanied by a number specification (sg= singular and pl= plural); thus 2sgSA=second person singular subject agreement. Arabic numbers 1-17 are noun classes, hence 2SA=subject agreement for noun class 2. We gloss agreement with a singular human as 3sgSA but agreement with plural humans as 2SA = class 2 subject agreement due to evidence for person features in the former but not the latter (see among others Bokamba 1976, Diercks 2010, Henderson 2009, 2010, Kinyalolo 1991). This will become relevant in §4.2 and §5.2. Other glossing conventions are PST= past; FUT= future; AAE=alternative-agreement

effect. We follow Carstens (1991) in analyzing noun class as number and gender. (1a) *ny-* vs *en-* and (1c) *y-* vs *a-* are phonologically conditioned variants. Tone marking is omitted for lack of a guiding analysis or confidence in our transcriptions.

² Lubukusu's classification by Guthrie as E31 was revised to JE31c in Maho (2008) and J30 in Lewis (2009).

³ Wasike (2007) reports that agreeing 'how' occurs in a variety of interlacustrine Bantu languages, including Runyoro (Uganda), Luganda (Uganda), and Kinyarwanda (Rwanda). He notes that Taylor (1985) discusses a similar pattern for Nkore-Kiga (Uganda). We are unaware of other agreeing adjuncts apart from these except apparently an agreeing 'thus' in some Luyia varieties; see note 6.

⁴ See Buell (2009) and Cheng & Downing (to appear) for exploration of an alternation in Zulu that looks quite similar. Their analyses show that a Zulu position immediately after the verb (IAV) is associated with true questions and focus. Some preliminary work on Lusaamia revealed that an echoic reading was strongly favored for non-subject *wh* not occupying the position immediately after the verb, and a true question interpretation was strongly favored for non-subject *wh* in the position immediately after the verb as reported for Zulu in Cheng & Downing (op cit). But this intuition faded under continued questioning for reasons not clear to us. More work with additional speakers is therefore needed on non-subject *wh*-phrases and focused material in Luyia languages to determine whether the position after the verb has the same properties as in Zulu. Because this is not a question about 'how' in

particular but about non-subject questions and foci in general, we leave it to future research. See Cheng & Downing (to appear) for arguments that *wh* in the Zulu IAV position are in situ and post IAV items are right-dislocated. On the other hand see Van der Wal (2009) for a movement analysis of a similar-looking position in Makhuwa.

⁵ This sentence is taken from Wasike (2007), who claims that ‘how’s right-edge position makes its scope unambiguous. In contrast, the 3 speakers whom we have consulted consistently find this and comparable examples to be compatible with both matrix and embedded construals.

⁶ Towards the end of our research on agreeing ‘how’ we learned from David Odden and Michael Marlo (personal communication) that some varieties of Luyia have an agreeing manner adverb meaning ‘thus’, strengthening the resemblance between Luyia languages and the languages discussed in Landman and Morzycki (2003). Space considerations prevent an investigation of agreeing ‘thus’ in this paper.

⁷ Thanks to an anonymous reviewer for pointing this out.

⁸ The *wh*-phrase ‘what kind’ can be part of a DP that clefts. C of the cleft agrees with iPhi of the whole DP.

⁹ As noted in §2.2, only the long forms of *wh*-phrases can appear in clefts. Before non-interrogative clefted expressions an agreeing form of ‘be’ is required,

but before clefted wh-phrases it is optional. We include it consistently to facilitate comparisons among the interrogative and non-interrogative examples.

¹⁰ We pin the Luyia problem on agreement because PPs and adverbials can cleft in languages where clefts do not involve agreement: *It was [in the morning] that Sue found the letter.*

¹¹ This list is mainly comprised of suggestions made by colleagues, audience-members, and anonymous reviewers. We would credit each individual for his/her idea if recollection served us well enough. But given the vagueries of our memories we hope a general thank-you will suffice.

¹² We adopt the assumption that verbs in Bantu languages generally raise into the middle field of the clause. See among others Julien (2002), Carstens (2005), and Ngonyani (2006) for proposals as to its precise location in various languages. §4.3.2 will present a proposal from Diercks (2011a) that Lubukusu V raises to T, and then from T to C in a particular variety of locative inversion construction.

¹³ Though in general we expect a scope difference to correlate with differences in agreement like (20b) versus 21a), it's not clear that this extends to cases where the matrix subject is an expletive. One speaker suggested that Class 15 agreement (21a,b) would be most appropriate if a lot of people might want to call. Ndayiragije (p.c.) makes the plausible suggestion that this would be consistent with an arbitrary PRO reading for the subject of the infinitive. We leave analysis of Class 15 'how' agreement for future research. See Carstens (1991) for arguments that

Class 15 includes true infinitives as well as counterparts to the so-called *acc-ing* and *poss-ing* gerunds of English, possibilities that would take us far afield to explore in relation to ‘how’.

¹⁴ Thanks to Juvenal Ndayiragije (personal communication) for suggesting this possibility to us.

¹⁵ An anonymous reviewer asks if our analysis in combination with (23) entails that the logical object raised in a passive is the highest DP within vP; the answer is ‘maybe.’ Since ‘how’s uPhi can’t be valued by the DP contained within a by-phrase, perhaps the latter adjoins above ‘how’:_{[vP [vP [vP V_{pass} DP] how] by-phrase]. Alternatively, however, it could simply be that by-phrases are opaque and non-interveners for agreement for reasons to be determined. We leave this to future research.}

¹⁶Lubukusu is a ‘high’ applicative (APPL) language in Pylkkanen’s terms, allowing APPL on intransitive verbs and lacking the rigid transfer of possession semantics that she argues holds in ‘low’ applicative languages like English. Contrary to the predictions of her analysis, Lubukusu does not allow depictive secondary predication of indirect objects (IOs) apart from clausal-looking ones like ‘(while he was) drunk/tired’, which can refer to English IOs too (*I gave John a book while he was drunk*; vs **I gave John a book naked* -- out on construal of *naked* with *John*). For this reason IO evidence is not useful in relation to our investigation of ‘how’. In

contrast a question with *-rie* inside the IO is fine, such as ‘What kind of children did you buy food for?’

¹⁷ *Sichula* ‘naked’ is uninflecting and can only be used as a predicate adjective (**omwana sichula* – ‘a naked child’). *Embisi* –‘raw’ is an agreeing adjective. Some depictives involve more internal structure, for example *ne-ba-mele* – (while they were) ‘drunk’ from (22e). These differences do not affect the analysis of ‘how.’

¹⁸ Justine Sikuku (personal communication) finds object oriented answers more natural than instrument type answers, because a more specific strategy exists for questioning an instrument, namely adding an applicative morpheme to the verb and using ‘what’ to formulate a question like “What did they cut the paper with?”

¹⁹ We have found a class of exceptions to this generalization, in which the verb is ‘want’ or a perception verb like ‘see’ and a time expression intervenes licitly between the apparent direct object and ‘how’ agreeing in the object’s features. We suggest that this is because ‘want’ and the like can take a small clause complement headed by a zero copula. This is consistent with the general availability of a zero copula in Bukusu, and with the standard properties of ‘want’ type verbs cross-linguistically.

- (i) W-enya ka-ma-ki asubuhi ka-rie?
2sgSA-want 6-6-egg morning 6-how
‘How do you want your eggs in the morning, i.e. fried or scrambled?’
Our analysis: You want [your eggs in the morning (to be) how]

²⁰ Thanks to Dan Seely for suggesting we explore this topic.

²¹ The leveling of 1st and 2nd person distinctions under subject extraction is the clearest evidence for this analysis of AAE; see data presented in Kinyalolo (1991), Henderson (2009; 2010), Diercks (2009, 2010).

²² Bresnan & Mchombo (1995; B&M) demonstrate that the locative morphemes *pa*, *ku*, and *mu* in Chichewa are independent words, hence it is possible to conjoin them as shown in (i). This makes the Chichewa 2 mora size requirement relevant to them under B&M's analysis of them as nouns. But assuming with Carstens (1997) that the locative morphemes are functional categories, whether their cognates in Lubukusu are morphologically dependent does not affect the analytical possibilities.

(i) mu ndi pa madengu [Chichewa; Bresnan & Mchombo 1995]
18 and 16 6basket
 'in and on baskets'

²³ [✓] and [*] mark where the adverb can and cannot occur, respectively.

²⁵ Since 'tree' and 'how' are string-adjacent and 'how' agrees with tree, (51) and (52) can also mean 'What kind of tree fell in the forest?' We will ignore such systematically available but irrelevant readings.

²⁶ Not depicted here is agreement of C with an OP, which results in what appears to be doubling of the SA morpheme as shown in (44) (see Diercks 2010, 2011a on the analysis of this as C-agreement). The features of this agreement are also restricted to gender and number; person is precluded.

²⁷ Thanks to an anonymous reviewer for comments clarifying this line of argumentation.

²⁸ This analysis sets aside questions of how to constrain (i) LI to selected LOCS, (ii) RALI to unaccusatives and (iii) DALI to intransitives. We present a movement-theoretic account of (ii) in §7.3.4. See also Belletti (1988), Alexiadou & Anagnostopoulou (2001) for Case-theoretic ideas relevant to (ii-iii); Diercks (2011a) for an alternative approach without Case. Details are beyond the scope of this paper.

²⁹ Frequent pairing of an edge feature with agreement explains its apparent upwards orientation in many constructions; see Carstens (2005), Collins (2004). An anonymous reviewer makes the interesting suggestion that adjuncts and functional heads might differ systematically in that though both can have $u\text{Phi}$, the former lack edge features. This seems a promising idea but we leave pursuit of it to future research.

³⁰ An additional linear order problem for treating ‘how’ as a head in the middle field of the clause arises in relation to syntactic structure associated with the clitic in locative inversion constructions, because like the verb it must precede ‘how’ in linear order (see our preview of this analysis in §5.4.5, and details in §7).

³¹ Based on careful comparison, Buell (2011) argues that Zulu ‘why’ in the immediately post-verbal (IAV) position merits a special account different from that of other IAV *wh* and focused phrases, and accordingly argues that the IAV position of *wh*-phrases in Zulu may not be of syntactic origin but rather the result of some late-

level Spell-Out effect. An anonymous reviewer suggests that if this is the case, the argument here is weakened. Given the oft-described correlation of true question/focus interpretation and IAV position, we are skeptical, but even if Buell's conclusion is borne out we think the other arguments given in §6.3 suffice to rule the Spec, head approach out. Note 29 pointed out yet another word order problem that would arise upon considerations of the locative clitic's position (see §7) though we will not discuss this here for space reasons.

³² Once the agreeing locative clitic is taken into account this problem is exacerbated; see §7.

³³ We assume that concord is simply agreement under closest c-command with the features available in the noun phrase (see Carstens 2000, 2010a, 2011 and Baker 2008 on the relationship of concord to Minimalist theory).

³⁴ Cinque (2005) rejects N-raising and head-movement generally. But see Carstens 2010b for an N-raising analysis of DP-internal word order variation; Matushansky 2006 for a narrow-syntax approach to head-movement that does not violate the extension condition; and Roberts 2010 for arguments that the extension condition need not hold and that narrow-syntax head movement in the traditional sense does exist. While Boskovic (2008) argues that many languages without articles lack DP projections, the syntactic correlates to this in the languages he considers are not replicated in the Bantu languages that Carstens has studied (including Lubukusu and Lusaamia), suggesting that though these Bantu languages

lack articles they have DPs nonetheless. See Carstens (in preparation) on this question.

³⁵ Carstens points out that number agreement outside DP is also unexpected on the common assumption that number heads a functional projection in the DP's middle field (see Carstens 1991; Ritter 1992 among others). She argues that in a featural version of QR, number always raises to D to take scope over DP; hence interpretable number features are generally accessible to value $u\Phi$ of clause-level probes.

³⁶A few additional technicalities connected with constraining iterating agreement lie outside the scope of this brief sketch; see Carstens (2010a, 2011) for details.

³⁷Cinque (1999) and (2005) argues that adverbs and adjectives are heads, and when an adverb is to the right of the VP or an adjective to the right of NP, the word order indicates raising of VP/NP to a Spec higher than the modifier. See Carstens (2011) for arguments against this approach to adjectives. We will not pursue the matter further here for reasons of length.

³⁸ The copy theory of movement gives us two copies of DP bearing uF , which apparently inherit the value acquired by the higher member of the chain.

³⁹ In a compound tense construction (not illustrated here for reasons of length) the locative clitic attaches to the highest auxiliary. We therefore locate the projection that the clitic heads as sister to T in (87c).

⁴⁰ Alternatively we might suppose that even unaccusative *v* has an edge feature (see Legate 2003) raising DP_{loc} to an outer Spec, *vP* from whence DP_{loc} can either A-move to Spec, TP or A'-move to Spec, CP. Then the obligatory presence of the locative clitic would be viewed as coincidental.

⁴¹ Probing by AgrL feeds both A- and A'-movement of DP_{loc} . We address this in §7.3.2 (and see note 45).

⁴² As noted in §5.4.3 and §7.1, a number of previous analyses of LI assume that it exists in part because a locative and unaccusative SU in VP are “equidistant” from T (cf. Collins 1997, Culicover and Levine 2001, Diercks 2011a, Rezac 2006; see Chomsky 1995, Ura 1994, 1996 on equidistance). Since for many speakers ‘how’ agrees only with SU this will not work, motivating our analysis based on properties of AgrL. Our approach may assist in the analysis of inversion phenomena generally (see Zeller 2011 for similar ideas on other inversion constructions): while a head like AgrL is overtly realized in Lubukusu as the locative clitic, it might be phonologically null but syntactically active in other languages with similar locative inversion properties.

⁴³ It is conceivable that AgrL’s edge feature is used only in A-movement, so A’ movement does not pass through its Spec. This seems stipulative (and inverts Minimalist approaches to movement in a curious way). We will not pursue the idea here partly for reasons of length; and partly, anticipating discussion of (91) and

(92), because avoiding A' movement through Spec, AgrL seems not to alter substantially the outcome.

⁴⁴As Rezac (2003) and Obata & Epstein (2011) note, not all languages exhibit A' opacity. Under the analysis of Carstens (2005), Kilega is a Bantu language which does not. We note a potential conceptual connection between (93) and the alternative agreement phenomena (AAE) described for subject operators in §4.2 and §5.2. But AAE does not correlate with A' opacity: it is found in Kilega and Luyia both. Further consideration lies outside this paper's scope.

⁴⁵ Note that (Agree ('how', DP)) probes DP in situ, as does (Agree (AgrL, DP_{loc})). Hence A' opacity is not expected in these cases.

⁴⁶ This definition of an A' position entails adoption of Chomsky's (2001) version of the Phase Impenetrability Condition (PIC) (see (i)). Otherwise, in DALI constructions like (38)/(89-90), phasal AgrL will trigger cyclic transfer of vP before T is merged, hence removing the in situ SU before T can probe it. An alternative is to avoid the assumption that AgrL is ever a phase head, defining an A' position as any that an expression with a Q (=operator) feature moves to. This is compatible with Chomsky's (2000) version of the PIC in (ii). Thanks to an anonymous reviewer for bringing this issue to our attention.

(i) Given phases ZP and HP, the domain of H is inaccessible to operations at ZP, only H and its edge are.

(ii) In phase with head H, the domain of H is inaccessible to operations outside H, only H and its edge are.

⁴⁷ Under the FI model of Chomsky (2008), the entire chain is visible at the crucial point in (92b) because probing waits until C is merged and gives uF to T. We have already detailed reasons in §6.4 for rejecting Chomsky's proposal to introduce all probe features on phase heads for Luyia. We conclude that, for Luyia at least, the requirement of uniform chains in (93) cannot be derived in the way proposed in Chomsky (2008).

⁴⁸ See Jayaseelan (2001) for discussion of several similar A'-opacity problems.

⁴⁹ Carstens (2005) argued that *wh*-constructions in Bantu languages which appear to be monoclausal [Op agr-C [SU SA-T...]] must in reality be biclausal clefts formed with featureless null Ops raised to Spec, CP, in an attempt to explain why such languages have agreement with OPs but A'-opacity effects nonetheless.

Lubukusu's ability to have clause-medial agreement of 'how' and the locative clitic with a locative OP seems to rule this approach out.

⁵⁰ On the inverse Case filter see Martin (1999); Bošković (1997, 2002); Duguine (2010) for arguments in favor. See Bošković (2007) among others for arguments against it.

⁵¹ An anonymous reviewer suggests that our highly feature-specific approach to locality might be incompatible with defective intervention effects. In fact, well-

known cases of defective intervention are quite feature-sensitive: German and Icelandic T seems able to value a VP-internal nominative across an intervening dative, though it cannot agree across the dative; see among others Holmberg & Hróarsdóttir 2003.

⁵² An anonymous reviewer points out a possible connection between this and Miyagawa's (2010) proposal that the head of the phrase that houses subjects (α P for Miyagawa) may inherit topic/focus features from C.

⁵³We noted in footnote 43 that Kilega lacks A' opacity; its operators value $u\Phi$ of T and raise through Spec, TP (same for any AspPs present; see Carstens 2005; Obata & Epstein 2011). Kilega T thus seems a good candidate for a pure $u\Phi$ probe, like 'how.' Obata & Epstein propose that feature-splitting works differently in Kilega than in English, leaving OPs $i\Phi$ active. But the problematic prediction remains that agreement with OP and absence of A' opacity should go hand in hand. The contrast between Kilega and Luyia is perhaps the strongest argument against concluding that operators simply do not ever need to stop in an outer Spec, vP, in which case the expectation of A' opacity effects at this derivational point would not arise.