

Agree Probes Down: Anaphoric Feature Valuation and Phase Reference

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This paper investigates the question of the directionality of Agree in the domain of complementizer agreement (CA). Germanic and Bantu patterns of CA provide *prima facie* evidence of both downward- and upward- probing relations, as Germanic complementizers are valued by the subject of the embedded clause, whereas the relevant Lubukusu complementizers are valued by the subject of the main clause. We argue, however, that all feature valuation relations can be explained by a downward-probing Agree operation. Apparent instances of upward-probing feature-valuation are analyzed as anaphoric feature valuation, which is a composite operation consisting of movement of the relevant (unvalued, interpretable) features followed by probing of their c-command domain for valuation. A model of syntax that relies on the referential properties of phases is proposed to derive the behavior of anaphoric features from more fundamental syntactic properties, namely, that more rigid reference of a phase is derived by movement of phase-internal elements to the edge of that phase.

1 Introduction

The Minimalist Program (MP) (Chomsky 2000a et seq.) posits the notion of Agree: a local feature valuation relation that is constrained by a c-command relation between a Probe bearing an unvalued feature [uF] and a structurally lower Goal bearing an interpretable variant of this feature [iF]. In the last decade Agree has



come to be the principal mechanism for various kinds of feature-matching relationships in syntactic theory, and as such the subject of intensive research and interesting debates. Recent literature provides (at least) three different theoretical approaches to the Agree operation:

- (1) Theoretical Approaches to Agree
 - a. Agree is the result of a structurally higher Probe probing down (Chomsky 2000a; 2001; Preminger 2013; Polinsky & Preminger 2015)
 - b. Agree is the result of a structurally lower Probe probing up (Zeijlstra 2012; Wurmbrand 2011; Bjorkman & Zeijlstra 2014)
 - c. Agree can probe up or down (cf. Béjar & Rezac 2009¹, Baker 2008, Putnam & Koppen 2011, Carstens 2016)

On the surface there is a strong case for the existence of both upward and downward probing in the grammar of complementizer agreement (CA). One set of data motivating the downward-probing operation comes from the familiar West Germanic instances of CA where C agrees with the embedded subject.

- (2) Probing Down: [_{XP} Probe_[uF] [_{YP} Goal_[iF]]]

- (3) West Flemish (Haegeman 1992)

k peinzen da-n / *da ze morgen goan.

I think that-PL / that-SG they tomorrow go-PL

‘I think that they will go tomorrow.’

Prima facie evidence for upward probing can also be found in the complementizer domain, this time in various languages of Africa. The best-described case comes from Lubukusu, a Bantu language spoken in western Kenya (Diercks 2010; 2013; Wasike 2007); as shown in (5) the class 2 agreement *ba-* on the complementizer *-li* is triggered by the class 2 matrix subject, and not by any other potential agreement trigger in the embedded clause.²

¹ Béjar & Rezac (2009) do not propose that a Probe can probe upwards, but they argue that unvalued features of a Probe can be reintroduced higher up in the tree and Probe down from there again. This gives the surface appearance of Upward Probing, but is in effect downward probing. We will argue for something similar.

² Every Lubukusu noun phrase in this paper is glossed for its noun class, for which we follow the Bantuist tradition of labeling by number, where odd numbers are singulars (e.g. 1) and the immediately ascendant even number is that noun class’ plural form (e.g. 2 is the plural of 1). S or O following a verbal noun class agreement indicates ‘subject’ or ‘object’ verbal agreement. Person features are represented by the person together with the number, for example 1sg, 2pl.

- (4) Apparent Probing Up: [_{XP} Goal_[iF] [_{YP} Probe_[uF]]]
- (5) Lubukusu (Diercks 2013)
 (ba-ba-ndu) ba-bol-el-a Alfredi (ba) -li a-kha-khil-e
 2-2-people 2S-said-AP-FV 1Alfred 2-that 1S-FUT-conquer
 ‘The people told Alfred that he will win.’

Despite the apparent ‘upward’ agreement in (5), we argue that the data in (3) and (5) can both be accounted for by the widely accepted theory that unvalued features probe their c-command domains for a Goal by which to be valued (Chomsky 2000a et seq.). We claim that the Lubukusu ϕ -features on C have anaphoric properties (e.g. subject-orientation). We follow Rooryck & Vanden Wyngaerd (2011) in identifying anaphoric features as *interpretable, unvalued* features, which necessarily move to a position higher than their antecedent and undergo a standard Agree operation (as Rooryck & Vanden Wyngaerd 2011 propose is the derivation of self-reflexives). Therefore feature-valuation may either be non-anaphoric (where pure Agree results in downward-oriented syntactic agreement, *contra* Zeijlstra 2012, Wurmbrand 2011, and Bjorkman & Zeijlstra 2014) or anaphoric (where an Agree relation is preceded by a movement operation). Therefore while only one feature-valuation operation is a primitive of the grammar (Agree), there are multiple derivative patterns: non-anaphoric agreement (pure Agree) and anaphoric agreement (Internal Merge + Agree). Sections 2-4 deal with these core questions. Section 5 addresses why unvalued yet interpretable features should undergo internal merge by linking this movement to the Phrase Reference model of Hinzen (2012) (and related work). Section 6 discusses CA-data from another language spoken in Africa, Kipsigis, that provides additional evidence for our analysis. Section 7 compares our approach to Carstens’ 2016 analysis of Lubukusu CA.

2 Germanic CA: Agree probing down

Various Dutch and German dialects display CA in which a declarative-embedding complementizer carries inflectional morphology that agrees with the ϕ -features of the embedded subject. The West-Flemish examples illustrate that the complementizer *da* ‘that’ displays overt plural agreement morphology (–n) when there is a plural embedded subject, shown in (6a) (with no overt agreement otherwise).

Additional notable glosses include FUT ‘future,’ PST ‘past,’ PRS ‘present,’ AP ‘applicative,’ FV ‘final vowel,’ PASS ‘passive,’ CAUS ‘causative,’ COMP ‘complementizer,’ SBJ ‘subjunctive.’ Tone marking is not provided for the Lubukusu examples.

(6) West Flemish (Haegeman & Koppen 2012)

- a. k peinzen da(-n) / *da (die venten) Marie kenn-en.
 I think that-PL / *that-SG those men Marie know-PL
 ‘I think that those men know Marie.’
- b. k peinzen da(-∅) / *da-n (dienen vent) Marie kenn-t.
 I think that-SG / *that-PL that man Marie know-SG
 ‘I think that that man knows Marie.’

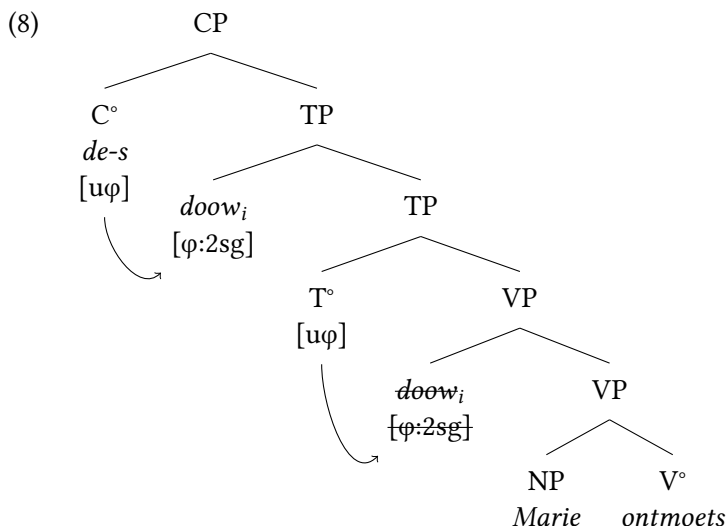
Tegelen Dutch complementizers show a slightly different pattern, displaying overt inflection (-s) with second person singular subjects (*doow* ‘you’ in (7)) (and a bare form otherwise).³

(7) Tegelen Dutch (Haegeman & Koppen 2012)

- a. Ich denk de(-s) / *det (doow) Marie ontmoet-s.
 I think that-2P.SG / *that you2P.SG Marie meet-2P.SG
 ‘I think that you will meet Marie.’
- b. Ich denk det(-∅) / *de-s (geej) Marie ontmoet-e.
 I think that / *that-2P.SG you2P.PL Marie meet-PL
 ‘I think that you will meet Marie.’

The analysis of Germanic CA that we advocate here is the same as that proposed by Carstens (2003), van Koppen (2005), and Haegeman & Koppen (2012). Following this literature, we assume that C° in dialects with CA has a set of uninterpretable ϕ -features, which probe C°’s c-command domain for a set of matching interpretable ϕ -features. The first potential Goal it encounters is the embedded subject, which values the ϕ -features on C° that are then spelled out as CA. This derivation represented in (8):

³ We only describe the basic properties of CA in West Germanic here. We refer the reader to the extensive literature on CA in Germanic for a more in depth description of this phenomenon (see van Koppen 2005 and references cited there).



We will briefly consider two different alternative analyses of the Germanic CA pattern, demonstrating that a downward-probing Agree analysis is the most probable (though mainly pointing the reader to the relevant literature for discussion).⁴ One alternative has been to argue φ -features on C° and T° have the same origin (the ‘shared-source’ analysis).⁵ One implementation of this idea is for the φ -features that arise on C° to have originated in T° (an approach amenable to a Spec,Head agreement analysis: cf. Den Besten 1983; Den Besten 1989; Zwart 1993; 1997; Hoekstra & Marácz 1989; Watanabe 2000, among others). On this approach the φ -features of T° are valued by the subject in Spec,TP, after which T° (or the φ -feature set of T°) raises to C° and are realized as CA. A second implementation of the ‘shared source’ analysis adopts a Feature Inheritance approach, which also leads to a configuration in which the subject c-commands the φ -features of C° . More specifically, Chomsky (2008 et. seq.) argues that the φ -features on C° cannot remain on C° (because it is a phase head) and therefore have to be passed on to a non-phase head, T° in this instance (see also Richards 2007). CA can then be taken as an additional morphological reflex of agreement between T° and the subject, spelled out on C° at the base position of those φ -features.

Haegeman & Koppen (2012) argue extensively against the ‘shared source’ approach, showing that a key prediction (that the φ -feature set on T° be identical

⁴ Another possible approach is that Germanic CA is non-syntactic, occurring at PF as a morphological process (cf. e.g. Ackema & Neeleman 2004, Fuss 2008). We refer the reader to van Koppen 2005 and Haegeman & Koppen 2012 for counter-arguments.

⁵ See also Haegeman & Koppen 2012 for an extensive discussion of these proposals.

or a subset of the feature set on the C° phase head) is not upheld.⁶ Haegeman & Van Koppen point out two key empirical problems for this hypothesis: CA with coordinated subjects in Tegelen Dutch and CA with external possessors in West Flemish. For the sake of space, we consider only the first here. A basic example of CA in Tegelen Dutch is provided in (9):

- (9) Tegelen Dutch (Haegeman & Koppen 2012)
Ich denk de(-s) (doow) Marie ontmoet-s.
I think that-2sg you.sg Marie meet-2sg
'I think that you will meet Marie.'

In an example with a conjoined subject like (10), the verb (i.e. T°) agrees with the plural-feature of the entire coordinated subject *doow en ich* 'you and I', but CA is solely with the person and number features (2nd singular) of the first conjunct in this coordinated subject.

- (10) Tegelen Dutch (Haegeman & Koppen 2012)
... de(-s) (doow) en ich ôs kenn(-e) treffe.
that-2sg [you_{sg} and I]_{1pl} each.other_{1pl} can-PL meet
'... that you and I can meet.'

It is clear then that CA differs from TA in (10), which is unexpected if CA and TA have a shared source (in the sense we introduced earlier).

Having set aside the 'shared source' approach to Germanic CA, there is a second alternative analysis available: C° and T° probe separately, but embedded subjects raise into the CP-domain and trigger agreement on a CP-level Agr head (AgrC). AgrC° proceeds to raise over the subject in Spec,AgrCP, producing the expected word order where the complementizer (and agreement features) precede the embedded subject (See Shlonsky 1994 and Zwart 1993 for a discussion of this kind of approach). Although descriptively adequate, this split-CP implementation of an upward-probing analysis of Germanic CA poses some challenges, particularly regarding FCA patterns in Tegelen Dutch: it is problematic that AgrC would agree with a first conjunct that is not in its complement. Upward probing accounts of CA predict this type of agreement to be impossible (i.e. agreement with an element in the specifier of the Goal), because in order for Agree to take place the Goal has to c-command the Probe, which is not the case in the FCA

⁶ This is not a claim that the morphological forms must be identical, only that (after morphological analysis) the ϕ -feature distinctions shown on T° should demonstrably be the same ones shown on C°.

examples (see Baker 2008; Zeijlstra 2012; Wurmbrand 2011). As such, upward-probing accounts would never expect agreement with the first conjunct of a coordinated subject, contrary to fact. There are additional empirical problems, but for brevity's sake we refer the reader to van Koppen (2005; to appear).

The preceding discussion of Germanic CA patterns has shown that CA and TA are best analyzed as resulting from distinct φ -feature probes, one on C° and one on T° , and that C° probes down in the structure, finding the embedded subject in its canonical position (as argued by Carstens 2003; van Koppen 2005; Haegeman & Koppen 2012). The facts from Germanic CA argue against an account where Agree only probes up (cf. Zeijlstra 2012; Wurmbrand 2011; Bjorkman & Zeijlstra 2014), though the case remains to be made that all feature valuation operations are the result of a downward-probing Agree.

3 Lubukusu CA: Agree probing up?

In contrast to the Germanic patterns, Lubukusu (Bantu, J.30, Kenya) displays a CA relation where a declarative-embedding complementizer shows full φ -feature agreement (gender, number, and person) with the subject of the matrix clause:⁷

(11) Lubukusu (Diercks 2013)

- a. ba-ba-ndu ba-bol-el-a Alfredi ba- li a-kha-khil-e
 2-2-people 2SA-said-AP-FV 1Alfred 2-that 1SA-FUT-conquer
 'The people told Alfred that he will win.'
- b. Alfredi ka-bol-el-a ba-ba-ndu a- li ba-kha-khil-e
 1Alfred 1SA-said-AP-FV 2-2-person 1-that 2SA-FUT-conquer
 'Alfred told the people that they will win.'

As we mentioned above, this CA pattern appears on the face of it to be a case of Agree Probing Up, with a probe structurally lower than its goal, though we will show in what follows that this approach cannot be maintained.

First, example (12) gives a morphological causative construction; Despite the fact that the causee *Alfredi* in (12) triggers CA in a periphrastic causative context, when it is not the subject of the sentence it cannot trigger agreement on the complementizer:

⁷ For discussion of similar constructions, see Kawasha (2007) (5 central Bantu languages), Letsholo & Safir (2017) (Ikalanga), Diercks & Rao (2017) (Kipsigis), Torrence (2016) (Ibibio), and Idiatov (2010) (various Mande languages). Ongoing work by Diercks has shown the same phenomenon in Idakho and Wang'a (Bantu languages of the Luyia subgroup, related to Lubukusu).

- (12) n-a-suubi-sya Alfredi n-di/*a-li ba-keni
 1sgSA-PST-believe-CAUS 1Alfred 1sg-that/*1-that 2-guests
 khe-be-echa
 PROG-2SA-come
 ‘I made Alfred believe that the guests are coming.’

Similarly, in a ditransitive the complementizer can only agree with the subject, not with the intervening indirect object.

- (13) W-a-bol-el-a Nelsoni o-li/*a-li ba-keni ba-a-rekukha
 2sgSA-PST-say-AP-FV 1Nelson 2sg-that/*1-that 2-guests 2SA-PST-leave
 ‘You told Nelson that the guests left.’

As can be seen in (14) and (15) below (equivalents of (12) and (13) respectively), both the causee and the indirect object can be object-marked on the verb; object marking in Lubukusu is restricted to structural arguments of the verb (Diercks 2011; Sikuku, Diercks & Marlo to appear).⁸ This is reason enough to believe them to be DP objects of the verb and therefore potential interveners in any Agree relationship between the complementizer and the superordinate subject.⁹

- (14) N-a-mu-suubi-sya Alfredi n-di/*a-li ba-keni
 1sgSA-PST-1OM-believe-CAUS 1Alfred 1sg-that/*1-that 2-guests
 khe-be-echa.
 PROG-2SA-come
 ‘I DID make Alfred believe that the guests are coming.’
- (15) W-a-mu-bol-el-a o-li/*a-li ba-keni ba-a-rekukha.
 2sgSA-PST-1OM-say-AP-FV 2sg-that/*1-that 2-guests 2SA-PST-leave
 ‘You told him that the guests left.’

⁸ Non-accusative objects like locative phrases may be marked on the verb, but are marked with a post-verbal locative clitic, as demonstrated by Diercks (2010; 2011) and Sikuku, Diercks & Marlo (to appear) (‘accusative’ here is used as an expository mechanism, as DPs are not case-marked in Lubukusu, like in other Bantu languages, and the status of case-marking in general is a larger issue (Harford Perez 1985; Halpert 2012; van der Wal 2013). And as Diercks (2011) shows, even for locatives in Lubukusu it is only possible to mark them on the verb when they are selected by the verb, locative-marking is unavailable for adjunct locative phrases.

⁹ Example (14) is translated as *verum focus* because doubling an object marker with an overt object is only possible in Lubukusu in a set of pragmatic contexts akin to those that elicit *verum focus* in English.

Following Diercks (2013), our conclusion is that the Lubukusu CA construction cannot be explained under an account of $u\phi$ on C° probing upwards, given the lack of intervention effects with intervening DPs. Coupled with the evidence from Germanic CA, this leads us to conclude that downward probing is a central component of the syntax, whereas upward probing is not necessarily so.

Diercks (2013) proposes that agreement on the complementizer is triggered locally in the embedded CP by a null subject-oriented anaphor, so the agreement is in fact only triggered indirectly by the matrix subject. As a result of the subject-oriented properties of the null anaphor, CA in Lubukusu is determined by the features of the matrix subject. Abstracting away from the details for the moment, Diercks claims that the strict subject orientation of Lubukusu CA is enforced by LF clitic-movement of the null anaphor to T° (following Safir’s 2004 analysis of long-distance subject-oriented anaphors).

Support for the proposal that Lubukusu CA is anaphoric in nature comes from predictable sources, mainly, that the locality constraints for anaphoric relations are known to be distinct from those for morphosyntactic agreement (formalized by Chomsky’s 2001 Agree). First, CA is clause-bounded, only agreeing with the most local super-ordinate subject (cf. Chomsky’s 1973 Tensed Sentence Condition). This is evident in (16), where the lower complementizer only agrees with the intermediate class 2 subject, and agreement with the class 1 matrix subject is unacceptable.

- (16) Alfredi ka-a-loma a-li ba-ba-andu ba-mwekesia ba-li/*a-li
 1Alfred 1S-PST-say 1-that 2-2-people 2S-revealed 2-that/*1-that
 o-mu-keni k-ola
 1-1-guest 1S-arrived
 ‘Alfred said people revealed that the guest arrived.’

In addition, Lubukusu CA has a strict subject orientation—indirect objects and causes don’t trigger agreement, agentive by-phrases in passives do not either, nor do other plausible agreement triggers like source adjuncts in perception predicates (e.g. *hear from X*). We refer the reader to Diercks (2010; 2013) for additional empirical argumentation for an anaphoric analysis of Lubukusu CA.

The proposal to be set forward here maintains the core generalizations and analysis of Diercks 2013, namely, that Lubukusu CA is at its heart an anaphoric relation.¹⁰ The contribution that we will make here is first, to utilize the Lubukusu CA facts as evidence for a generalizable theory of anaphoric relations, and second, to follow recent work like Hicks (2009), Reuland (2005); Reuland (2011), and

¹⁰ See section 4.3 below for an alternative analysis from Carstens (2016).

Rooryck & Vanden Wyngaerd (2011) (among others) to derive anaphoric relations from more basic elements of the grammar. And, to bring this back even further to the broadest purposes of this paper, these conclusions present crucial evidence on the question of the directionality of probing of Agree, as discussed in §1.

4 Anaphoric vs. non-anaphoric feature valuation

4.1 Setting the stage for the analysis

The Agree operation is a natural, parsimonious account of feature-valuation, and is particularly useful for explaining West-Germanic CA constructions. CA in Lubukusu and other Bantu languages, however, cannot be licensed solely by Agree without significantly altering notions of locality and Agree. This sets up an interesting dichotomy that lies at the heart of our proposals in this paper. On the one hand, inflectional agreement relations (like subject-verb agreement) are derived by a feature-valuation operation with specific generalizable properties (like strict structural locality). On the other hand, basic anaphoric relations like subject-oriented anaphors in object position, also show matching of features, but take on a different set of characteristics with respect to locality and other constraints (as documented in a long line of generative literature, e.g. Chomsky 1981; Safir 2004; Reuland 2011). While recent generative work (e.g. Reuland 2011, Hicks 2009, comments in Wurmbrand 2011) has made significant progress reducing anaphoric relations to Agree relations (along with basic chain formation), the Lubukusu CA facts are a *prima facie* case of precisely the opposite situation. Here, an instance of morphosyntactic agreement does not in fact accord with the predictions of agreement by Agree, instead showing the properties of an anaphoric relationship. The paradox, of course, is that the argument that Lubukusu CA is best analyzed as anaphoric instead of a syntactic agreement relation is nonsensical if anaphora and agreement are both explained by the same underlying syntactic operation (Agree). The logical conclusion, then, is either that Lubukusu CA is not in fact anaphoric (*contra* Diercks 2013), or that anaphora and agreement do not reduce to identical syntactic operations.

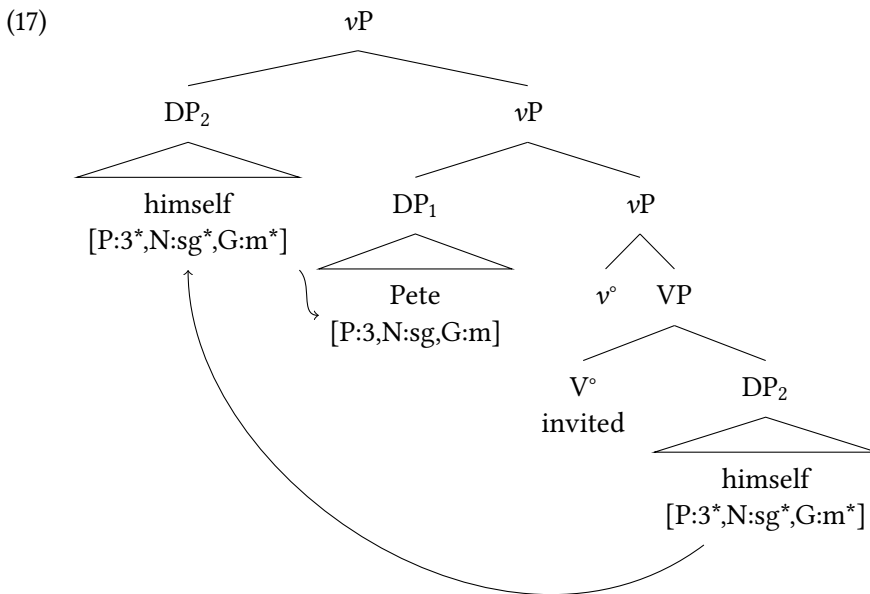
Our conclusion is that Lubukusu CA is an example of an anaphoric feature-valuation relationship that cannot reduce to Agree alone. If this is in fact the case, then any efforts to reduce all feature sharing/strict reference relationships in the syntax to identical Probe-Goal relations (= Agree) are misguided, and there needs to be some principled way to distinguish anaphoric-feature-valuation from basic

agreement-feature-valuation on a theoretical level. Our claim, as we've discussed above (following Rooryck & Vanden Wyngaerd 2011), is that anaphoric feature valuation relations derive from a compound operation of Move + Agree.

4.2 Deriving Lubukusu CA

4.2.1 Step 1: Reducing anaphoric relations to Agree

We follow Hicks (2009), Reuland (2011), and Rooryck & Vanden Wyngaerd (2011) (henceforth, R&VW) in assuming that binding is not a primitive of grammar. In particular, R&VW propose that intensifiers and reflexives must raise out of their base positions to adjoin to vP . This movement is necessary in order for these units to be in a position from which they can probe their c-command domain and are valued by the subject (equating reflexives with Doetjes' 1997 analysis of floating quantifiers). Example (17) derives the sentence *Peter invited himself*, where features marked with a * are those that are shared with the subject DP (R&VW: 89 ex (2)).¹¹



¹¹ This feature sharing/valuation occurs via the Agree relation (Frampton & Gutmann 2000; Pesetsky & Torrego 2007).

Under this view, Agree (by a head H) is hypothesized to exclusively probe H's c-command domain. Anaphors are analyzed as consisting of a set of unvalued φ -features that are valued (via Agree) by moving the reflexive over its antecedent. Subsequent subject and verb movement then obscure this reflexive movement (in R&VW's account). In order to be able to distinguish this agreement from other φ -feature valuation (which is presumably deleted or not interpreted at LF), they claim that the φ -features on reflexive pronouns are interpretable, unvalued features. A major prediction of R&VW's approach (and others like theirs) is that self-anaphora are at their heart an instance of feature valuation in the syntax.¹² If this is the case, there ought to be feature valuation operations that show the properties of anaphora while having little to do with reflexivity of predicates. The claim that we advance in the remainder of this paper is that Lubukusu CA exemplifies precisely this prediction – feature valuation that shows the distributional properties of anaphora, but that does not connect directly to reflexivity of predicates. The basic case of Lubukusu CA is an instance of a feature bundle with the same values as anaphoric features, namely interpretable and unvalued, and hence shows the same syntactic behavior (despite not being an instance of predicate reflexivity).

4.2.2 Step 2: The interpretative effects of CA in Lubukusu vs. CA in Germanic

Diercks (2010; 2013) observes that the agreeing complementizer in Lubukusu has evidential properties: an agreeing complementizer signals the speaker's assessment that the reported information is relatively reliable, and is ruled out in instances where the reliability of the reported information is in question. In those cases, a non-agreeing complementizer (here *bali*) is necessary:

- (18) Mosesi a-lom-ile _____ Sammy k-eb-ile chi-rupia.
 1Moses 1S-say-PRF COMP 1Sammy 1S-steal-PST 10-money
 'Moses has said that Sammy stole the money.'

- a. Moses saw the event, and the speaker believes him: **bali/ali*
- b. Moses didn't see the event, but reported hearsay: *bali/*ali*
- c. Moses says he saw the event, but the speaker doubts him: *bali/*ali*

¹² This is opposed to an approach like that of Reinhart & Reuland (1993), where self-reflexives are the product of constraints on licensing reflexivity of predicates (i.e. multiple arguments of a predicate being saturated by the same semantic variable).

Here we observe a noticeable contrast between CA in Germanic and Lubukusu/Bantu; whereas the agreeing complementizer appears to have an interpretive effect in Lubukusu, Germanic CA does not have any semantic contribution (see van Koppen 2005; to appear). Based on these patterns, we hypothesize that the φ -features on C° in Lubukusu have an effect on semantic interpretation, and are therefore interpretable, unvalued features. The φ -features on C° in Germanic do not have an interpretation and are hence uninterpretable, unvalued features. This key contrast is noted in (19) (for the distinction between (un)interpretable and (un)valued features see also Pesetsky & Torrego 2007):

- (19) φ -features on C
Lubukusu: interpretable, unvalued
Germanic: uninterpretable, unvalued

Note, at this point we have not given a precise account of what the interpretation of these interpretable features is, only that the presence of these features leads to an interpretation that is different from the one where these features are absent.

4.2.3 Step 3: Deriving Lubukusu Complementizer Agreement

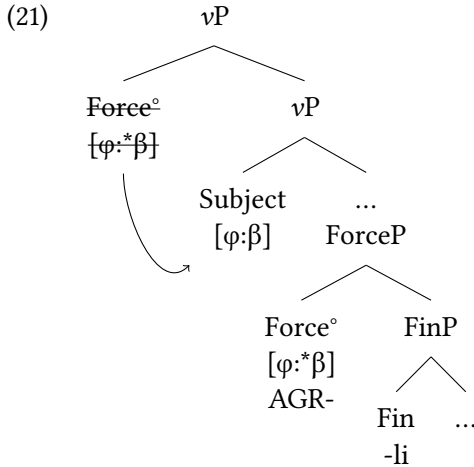
As a point of departure, we analyze the φ -features originating on a higher CP-projection than the rest of the complementizer, following the same proposal in Carstens (2016).¹³

- (20) [_{ForceP} Force[$i\varphi$:_] ... [_{FinP} Fin[-li] [_{TP} ...]]]

C° is merged with unvalued, interpretable φ -features. At present, we will simply stipulate that because these features are interpretable, unvalued features, they are not valued immediately by Agree. The derivation proceeds until the v phase head is merged, at which point the subject is merged, and Force is adjoined to vP in a movement operation. It is from this adjoined position that the interpretable, unvalued φ -features of Force probe the subject, and are specified as sharing its φ -features. On this analysis, Force $^\circ$ will always agree with the highest Goal in the vP , namely the subject. Given the morphophonological requirements of Force (i.e. it must undergo morphological merger with a C head),

¹³ Our thanks goes to Vicki Carstens (p.c.) for invaluable comments and feedback on this analysis. See Carstens (2016) for a different approach to these same data that (like our approach) seeks to explain Lubukusu CA under a general analysis of feature valuation (agreement), as opposed to the anaphoric analysis pursued here.

the vP -adjoined copy of Force cannot be spelled out, only the lower copy can be phonologically-realized:



On these grounds, CA in Lubukusu is derived by the very same mechanism that we find for CA in German: downward-probing Agree. The crucial difference between CA observed in these two languages is not the mechanism(s) employed, but rather, the moment of the valuation of these ϕ -features:

(22) Derivations of CA

- Germanic: ϕ -features on C are valued via Agree with the embedded subject
- Lubukusu: ϕ -features on C are valued via a combination of Internal Merge + Agree with the matrix subject

The critical component of our analysis, then, can be reduced to this general principle (which is directly based on R&VW, but generalizes beyond argument anaphors):

(23) Principle for the Anaphoric Properties of Agreement (PAPA)

Anaphoric ϕ -features (i.e., interpretable, unvalued ϕ -features) adjoin to the edge of vP .

In the case of Lubukusu CA, the anaphoric ϕ -features of the agreeing complementizer adjoin to vP and are valued by Agree at this point. A welcome result of this analysis is that our assertion that Agree always probes downward can be

upheld. The difference between Bantu and West-Germanic (to speak metaphorically) is that uninterpretable ϕ -features are impatient, probing their c-command domain at first-merge, whereas anaphoric ϕ -features are patient: they do not probe their c-command domains when merged, but are instead (eventually) adjoined to vP and probe from that position.

The principle in (23) is presented as axiomatic, but this raises many important issues. What exactly is the nature of the interpretation of interpretable, unvalued features? And more pressing for our current concerns, what evidence is there that these anaphoric features must raise to the edge of vP , rather than probing their own c-command domain? Furthermore, it is important to the current discussion whether the PAPA is in fact axiomatic, or if it can be derived from more basic principles. We now turn to these questions.

5 Toward an Explanation of the PAPA

After briefly discussing relevant previous work on anaphors in the next subsection, we engage in 3 levels of argumentation to work our way back to a discussion of the PAPA: 1) why syntactic elements move to the vP edge in general, then 2) why object anaphors specifically move to vP edge, and 3) the extension back to our concerns, of why anaphors in our particular context (anaphoric features at CP) move to the vP edge.

5.1 Movement of Anaphors

The idea that reflexives covertly raise to a position local to their antecedents is a long-standing explanation for anaphoric properties in generative grammar. Safir (2004), Pica (1987), and Cole, Hermon & Sung (1990) all rely on this kind of analysis of long-distance anaphors, raising into a local relationship with their antecedents, and while Reuland (2011) does not argue that self-reflexives universally raise into their predicate, he does conclude that they do in at least a subset of cases due to general economy constraints in interpretation.

R&VW propose that complex reflexives adjoin to vP , but they leave open the question of what motivates movement of self-reflexives to the edge of vP :

It is not clear to us at this point what drives the movement of self-reflexives to the edge of vP . It might be that this movement is driven by the need for valuation of unvalued features. Bošković (2007) suggests something along these lines, in that he argues that the uninterpretable features present on a constituent X may trigger the movement of X. Alternatively, there is another feature of self-reflexives that requires satisfaction and that triggers their movement. (R&VW: 106, fn. 14).

R&VW do not offer a motivation for this movement, and leave the question for future research. In general, the notion that the phase is the source of binding domains is implicit in the work of both Reuland (2011) and R&VW, who utilize such independently motivated locality constraints to derive the properties of binding. There is also much more work that focuses on the role of phase boundaries as delimiting binding domains in a variety of specific construction types (Wurmbrand 2011; Lee-Schoenfeld 2008; Canac-Marquis 2005; Heinat 2006; Hicks 2006; 2009; Quicoli 2008; Charnavel & Sportiche 2016).

5.2 On movement to the edge of the vP phase

The PAPA (23) proposes that interpretable, unvalued features move to the edge of vP : this accounts for the core Lubukusu CA facts, but *why* do anaphoric features behave in this way? We believe that this raising of anaphoric ϕ -features to the phase edge is a plausible proposal if evaluated in the light of recent work on the meaning of grammatical categories by Wolfram Hinzen and his collaborators (Hinzen 2012; Sheehan & Hinzen 2011; Hinzen & Sheehan 2013; Arsenijević & Hinzen 2012), who claim that phases have both syntactic and semantic properties, specifically, phases enable *reference*. In short, we will argue that the anaphoric features move to the edge of the phase because they have to become referential, and in order for the vP itself to be capable of referring to an event.

5.2.1 Phases as a unit of semantic significance

Hinzen (2006); Hinzen (2012) and Hinzen & Sheehan (2013) challenge the notion that the semantic ontology and semantic principles are independent of syntax. This abandons the approach developed in a long history of Chomsky's work that claims that language is simply a tool to express thought, but that language and thought are fundamentally distinct (e.g. Chomsky 2000b). Hinzen adopts a framework that is in fact closely linked with the syntactic architecture of the Minimalist Program (Chomsky 2000a; 2001; 2008) that claims that the syntactic derivation proceeds by phase, and each phase must necessarily be legible at the C-I (Conceptual-Intentional) interface. However, Hinzen contests the traditional approach and instead claims that grammar is in fact the principle factor that allows for organization of meaning in language. Therefore, "rather than being 'autonomous' and merely 'interfacing' with the semantic component, ... grammar is a way of carving up semantic spaces" (Hinzen 2012:311). That is to say, grammar "creates the semantic ontology of language," such that grammar in fact is meaningful, and meaningful contribution of grammar is reference (Hinzen 2012:311).

Specifically, the phase is the referential component of grammar, with different phases referring to different entities—DPs refer to individuals, vPs to events, and CPs to propositions/truth (Hinzen & Sheehan 2013; Sheehan & Hinzen 2011). A phase's semantic contribution is to take the conceptual/predicational content of the phase (e.g. the concept of DOG, or BANANA) and to enable linguistic *reference* to relevant entities. Phases themselves are composed of a phase interior and a phase edge, as shown in (24), a notion with which syntacticians are now long familiar (Chomsky 2001 and subsequent work).¹⁴

(24) [EDGE [INTERIOR]]

(25) [DP the [NP man]]

A DP phase, for example, will refer to an object. The interior of a phase is the descriptive content of the phase and the edge of the phase (head+extended material) enables reference. In this sense lexical content cannot refer on its own – reference is only possible in grammatical contexts.

Lexemes by contrast [to animal calls] not only can be used referentially in the physical absence of their referent, but are also very incomplete in their meaning. The word 'eagle' by itself does not denote anything in particular: not this eagle or that, not all eagles or some, not a kind of bird as opposed to another, not the property of being an eagle, etc. – things that it can denote only once it appears in the right grammatical configurations. It is also used for purposes of reference and predication, in addition to being used as a directive for action, and it again requires a phrasal context, hence grammar, when it is so used. (Hinzen & Sheehan 2013: 42-3).

On this approach, then, linguistic meaning is *reference* (to objects, events, and propositions), and reference is determined grammatically, via a syntactic derivation by phase. For ease of exposition, we will refer to this general framework as the Phase Reference (PR) model. In one sense the PR model is an inconsequential shift for syntacticians' everyday sort of analysis – this does not change the nature of our grammatical architecture much, retaining derivation by phase, Merge, Agree, and the kinds of functional structure we are familiar with at present. In another sense, however, the PR model is a dramatic shift, as we suddenly have incorporated reference—a central semantic notion—into the syntax itself. The PR model introduces a new range of predictions for a given syntactic analysis

¹⁴ The formulation in terms of edge/interior presented here is adopted from Hinzen & Sheehan (2013).

(involvement of phase edges in a derivation ought to predict referential consequences for the relevant referent). It also incorporates an additional kind of explanatory mechanism for solving linguistic puzzles, given that the referential properties of language is now a central aspect of the syntax. Let us look at some specific examples of how syntax and semantics are intertwined by looking at Sheehan and Hinzen's 2011 (henceforth S&H) discussion of the referential possibilities of DPs and CPs, before exploring the consequences for ν P structure that we will rely on in our approach to valuation of anaphoric features.

As for the DP-level, S&H point to Longobardi's (1994; 2005) proposals regarding the range of interpretations available for DPs, particularly the proposal that proper names raise to D. Modifying and building on Longobardi's approach, they propose that there is a three-fold ontology of DPs in terms of their referential capabilities:

(26) Referential capabilities of DPs (S&H p.415)

- a. Indefinite existential nominal reference
- b. Definite descriptions (contextually bound free variables)
- c. Proper names (maximally specifically referential, with rigid reference)

One illustration that they rely on here draws on data from Elbourne (2008):

- (27)
- a. The Pope is usually Italian
 - b. (Pointing at the Pope) He is usually Italian.
 - c. #Joseph Aloisius Ratzinger is usually Italian.

Both definite descriptions and pronouns can refer to different individuals (as specified by context), whereas proper names have much more rigid reference to a specific individual.

S&H claim that these three sorts of DP reference are syntactically derived, that is to say, there are syntactic correlates of all three interpretive possibilities. "When the D-position is empty (there is no determiner and there is no movement to D), a default existential interpretation is derived, where reference is to an arbitrary instance of the predicate. In short, reference is restricted merely in virtue of the predicate's content, or by the interior of the nominal phase" (S&H p.421). Definite reference, in contrast, involves both the D° position and the base predicate position, such as an instance of a definite determiner in D° and the noun occurring in N° . In this case, both the phase interior and phase edge determine

reference” (S&H p.421). Proper names, in contrast, consist of movement from N° to D° with N° substituting for D° , such that “reference is unmediated by descriptive content and only the phase edge determines reference,” resulting in the rigid referential properties of proper names (S&H p.421).¹⁵ “Broadly speaking, then, the three referential possibilities nicely correlate with the three logically possible ways in which the phase edge and interior can contribute to the determination of reference: only the phase interior mediates reference, or both the interior and edge do, or only the edge is involved” (421).

S&H then extend this threefold ontology of phases, correlating the three referential possibilities of DPs for reference to individuals to a threefold ontology of reference by CPs to facts. Specifically, they claim that CPs may be indefinite, representing propositions, definite, yielding facts, or rigid in their reference, denoting truth.

(28) Referential capabilities of CPs (S&H p.424)

- a. **Reference to Propositions:** C is empty or underspecified, through a quantificational operator (optionally null in English), yielding an indefinite interpretation;
- b. **Reference to Facts:** C is pro-form (obligatorily overt in English) with a TP-restriction, yielding a referential interpretation;
- c. **Reference to Truth:** C is substituted by V/T overtly or covertly (covertly in English, overtly in V2 languages), yielding a rigid interpretation unmediated by a descriptive condition.

S&H correlate these referential possibilities with the various interpretations of clauses in embedded contexts in particular, discussing non-factive clauses as indefinite reference, factive clauses as definite reference, and root clauses and embedded clauses with root clause properties as those with the rigid interpretations that come from a truth-conditional (i.e. truth-referring) clause.

There are two relevant conclusions for our purposes here—the first is that there are particular interpretive (referential) properties of phases, and the second that the syntactic realization of a phase (specifically, the relationship between the phase-internal material and the phase edge) has specific referential consequences depending on the phase in question. Sheehan and Hinzen conclude their paper with the following statement:

¹⁵ The proposal of movement of proper names to D is adopted directly from Longobardi (1994; 2005).

... reference in human language is an ‘edge phenomenon’: it depends on the extent to which a phase edge is involved in the determination of reference. The more edge-heavy the phase becomes (through Determiner or Complementizer phasal heads, or movement of phase internal material into these positions), the more referential the phase becomes, giving rise to object reference and fact reference in nominals and clauses, respectively. (Sheehan & Hinzen 2011: 451)

These proposals are set forth as relevant to all phases (DP nominal reference, ν P event reference, and CP fact reference). To our knowledge they have only developed in-depth analyses of DP and CP, however, and our discussion here that extends their ideas to the realm of ν P is a new contribution; we adopt their claim that ν Ps refer to events, and rely on their connection of movement to the edge of a phase with increased specificity of reference so that we can motivate the movement of anaphoric φ -features to the edge of ν P.

5.2.2 Toward an ontology of ν P structure

Sheehan & Hinzen (2011) and Hinzen & Sheehan (2013) do not extend a detailed analysis of the reference of phases to ν Ps. Their comments are mainly restricted to the notion that ν Ps refer to events, though Sheehan & Hinzen (2011) do comment that more specific reference with respect to ν Ps may well have to do with the boundedness of events (i.e. the aspectual properties of predicates). We develop this idea here in more depth; specifically, we propose that there is also generally a threefold ontology of ν P phases based on the aspectual properties of predicates, as shown in (29):

- (29) Referential capabilities of ν Ps (to be expanded on below)
- a. **Existential event reference** (e.g. existential/presentational clauses)
 - b. **Atelic events** (boundedness of event is addressed but is not rigid)
 - c. **Telic events** (maximally specifically reference, with rigid reference to bounded event)

Here telic events are those where the predicate dictates a specific culmination point; atelic predicates do not (Beavers (2012) offers a good overview of the relevant issues). Existential clauses, on the other hand, are the most unspecified sort of event that does not refer to a bounded event at all, but rather a state of existence. For this ontology to hold in the PR model it should be demonstrable that telic events show maximal involvement of the edge of the phase in the syntactic derivation, with atelic events showing less, and existential reference to events

showing the least involvement of the edge. As we will see, the involvement of both verbs and objects in vP -based event reference complicates this threefold ontology, though notably in exactly the ways predicted by the PR model.¹⁶

Perhaps the classic English diagnostic for telicity of predicates is the distinction in application of *in/for* modifying PPs, for example *in an hour* (compatible with telic predicates) and *for an hour* (compatible with atelic predicates) (Vendler 1967; Dowty 1979; Thompson 2006; Beavers 2012, among many others).

(30) English (Thompson 2006: 213)

- a. Mary ate an apple in an hour/??for an hour.
- b. Mary walked ??in an hour / for an hour.

As noted by a variety of work, verbs alone do not determine the aspectual properties of a predicate, which are instead determined by the combined verb phrase material (Verkuyl 1972; 1989; 1993; Verkuy 1999; Pustejovsky 1991; Zagona 1993; Garey 1957; Tenny 1987; 1992; 1994; Krifka 1989; 1998; 1992; Dowty 1991; Jackendoff 1991; 1996; Travis 2010). For example, bare plurals in English yield atelic readings of predicates (31b), and objects with quantized reference yield telic predicates (31d), whereas objects with non-quantized reference yield atelic predicates (31c).^{17,18}

(31) English (Thompson 2006: 212, Beavers 2012: 24)

- a. Mary ate an apple in an hour/??for an hour.
- b. Mary ate apples ??in an hour / for an hour.
- c. John drank wine ??in an hour / for an hour
- d. John drank a glass of wine in an hour/??for an hour

¹⁶ It is important to note that the proposals here have broad-reaching implications that cannot possibly be defended sufficiently in this paper, and would take us too far afield of our overall goals of the exploration of anaphoric feature valuation. But we will provide evidence from existing work on telicity and aspectual properties of predicates in order to at least show that the ontology in (29) is well-founded empirically, and shows exactly the kinds of intersections of syntactic structure and referential results that are predicted by the PR model.

¹⁷ And, perhaps unsurprisingly, aspectual inflections (e.g. progressive vs. perfective) also influence the aspectual interpretation of predicates (Mary has written the book vs. Mary is writing the book).

¹⁸ Likewise, in English paths/goals represented in PPs can influence the interpretation of an event with respect to telicity, where specific goals of directed motion generate telicity whereas paths of motion alone do not, showing that it is not only objects that play a role in telicity of events, though we focus on object properties here (Thompson 2006: 214).

What we see, then, is that the properties of multiple components of a *vP* can influence the aspectual properties of a predicate. Thompson (2006) shows a variety of evidence (including word order of manner adverbs, among others) that there is movement to the edge of *vP*, proposing that telicity is produced by checking [bounded] features at an aspect projection. Thompson's proposal, therefore, is precisely that movement to the edge of *vP* correlates with telicity. Rather than adopt the proposal that this is the result of checking a [bounded] feature, we propose that this is a direct result of the fundamentals of the PR model – 1) phases are referential, 2) *vP* phases refer to events, 3) most specific reference to an event corresponds to telicity, and 4) the general strategy for achieving more specific reference within a phase is moving to the edge of the phase. Given this general PR approach, and following on Sheehan and Hinzen's (2011) suggestion that boundedness is the correlate of "referential specificity" with respect to events, a finding like Thompson's (that telicity corresponds with enrichment of the phase edge) is exactly what we would predict. The one new component here that is not directly suggested in Sheehan and Hinzen's work is that raising of the DP object (rather than just the verb) can correlate with higher specificity of reference.

As mentioned above, Sheehan & Hinzen (2011) focus on predicational lexical heads (N, V) raising to the edge of their phase in instances of more specific reference. Nothing in their account claims, however, that some other descriptive content of the phase interior ought not contribute to the 'greater referential specificity' of the phase in question.¹⁹ And in fact, Arsenijević & Hinzen (2012) (henceforth AH) discussion of the PR model gives reason to think that movement of either a verb or the DP object to the edge of the *vP* phase should in fact be expected as part of greater specificity of phase reference. AH in particular focus on how derivation-by-phase generates the specific sorts of recursivity and intensionality that occur in natural language. They make the argument that all lexical items begin their syntactic lives as predicates, essentially—that is, as the descriptive content of some phase, which becomes referential when a phase head is merged and when descriptive content is raised to the phase edge. Lexical items themselves are not predicates or arguments, but rather, 'predicate' and 'argument' are grammatical notions. The descriptive content of a phase becomes referential when that phase is complete – the lexical concept *MAN* becomes referential

¹⁹ One potentially problematic aspect of this proposal is that it may challenge somewhat their proposal for three-fold ontologies of each phase, which assumes that the predicate is either in the phase interior or in the edge, but doesn't directly deal with the idea that a portion of the phase's descriptive content could remain in the interior, and a portion raise to the edge. This doesn't undermine their account, as much as it potentially makes the available ontologies more complex than originally predicted, or perhaps even non-discrete.

when embedded in a DP phase: *this man* or *the old man* or even kind-referring structures like *men*. Phases are necessarily ordered, then, as parts of a whole (objects are participants in events, which are the foundation of propositions when embedded in a temporal frame).²⁰

As is clear at this point, the interior of a phase makes up the descriptive content of the higher phase, such that reference to an external object by a DP necessarily must be an object that is described by the lexical N and any other descriptive content (e.g. adjectives or PPs). Likewise, a DP object of a verb is part of the descriptive content of a VP, essentially forming part of the predicate—the descriptive content—of the *vP* phase. So in the sentence *Linus ate the pretzels* it is the object DP *the pretzels* and the verb *eat* that make up the descriptive content of *vP*, as they both belong to the phase interior of *vP*. And as such, raising of either the object or the verb itself in a *vP* ought to contribute to the degree of specificity of reference of the phase being built.

What we see, then, is that specificity of reference of an event is governed by (at least) two distinct components of events: the lexical predicate itself, and the arguments of the relevant predicates referring to that event. Specific reference to an event must necessarily include full specification of the participants in the event (e.g. a verb and its arguments) in addition to boundedness. Event Specificity therefore is composed of two distinct but clearly mutually dependent factors: reference to event participants (a/b below), and reference to boundedness/durativity (aspect) of the event (c).

(32) Degree of Event Specificity is determined by:

- a. inclusion of all participants in the event, including
- b. the degree of specific reference to those participants, and
- c. aspectual distinctions (telicity)

Intuitively this is relatively uncontroversial following on the discussion of telicity: an event of eating cannot be complete without reference to the agent and the theme. And given the degree to which objects and PPs are tied into (a)telic interpretations of predicates, it is clear that specificity of reference to events includes the properties of the participants in the event. In essence, then,

²⁰ This claim of the PR model (that phases induce reference) is also meant to derive the general intensionality of language (Hinzen, Sheehan & Reichard 2014; Arsenijević & Hinzen 2012; Hinzen & Sheehan 2013). The interpretation of any phrase or constituent—even of a proposition—is dependent on the grammatical structures it occurs within. This accords with a model where any phase-internal material makes up the descriptive content of the reference of the phase that is currently being built, even if part of that phase-internal material is a previous phase.

ν P phases without reference to all the participants of an event are incomplete, a notion that we build on below.

5.2.3 Anaphora and underspecification of ν P events

Recall the PAPA, repeated here as (33):

- (33) Principle for Anaphoric Properties of Agreement (PAPA):
Anaphoric ϕ -features (i.e., interpretable, unvalued ϕ -features) adjoin to the edge of ν P.

We have claimed that moving the anaphor into the edge of ν P provides the anaphoric feature bundle with a value and hence with a reference (which is in turn critical for determining the referential properties of the ν P, the entire event).

Let us first look at the anaphoric feature set of a reflexive object of a verb: as proposed previously, they are interpretable, unvalued ϕ -features. Interpretable, valued ϕ -feature sets are usually referential, i.e. they can be linked to an entity in the discourse. Uninterpretable ϕ -feature bundles, for instance on T° or on C° in Germanic CA-languages, are not referential. They simply reflect the syntactic relationship between, in this example, the verb or the complementizer and the subject. A feature bundle that is unvalued yet interpretable is somewhat of a paradox: it is interpretable, so it should be referential, yet it is unvalued, so it is unclear to what entity it refers exactly.

We suggest that the presence of this sort of feature set, i.e. referential features that are unspecified with respect to their antecedent, renders the reference of a ν P event incomplete, underspecified. Hinzen (2012) and Sheehan & Hinzen (2011) argue that referentiality is an edge phenomenon. Our proposal is that referential arguments of an event that do not have a value must necessarily raise to the edge of ν P to be identified, as it were, to become referentially specified. The intuition here is that underspecified ν Ps are not capable of referring to events. The solution to this paradox is to raise the phase-internal material (the descriptive content of the phase: the anaphoric object here) to the edge of ν P, where independent operations (i.e. Agree) allow the ϕ -features to attain a value. In essence, anaphoric ϕ -features (i.e. interpretable unvalued features) are a syntactic element in search of a referent, and as reference happens at phase edge, anaphoric features raise to the edge of the phase from which position they are valued, by probing the subject in its base position in Spec, ν P. In short, movement of anaphors is not explained solely by the needs of the anaphor, but also by the needs of the event-referring ν P that the anaphor is embedded within.

From their position at the edge, an anaphoric feature bundle is valued by the syntactic mechanisms generally utilized for feature valuation (Agree), leading to its anaphoric interpretation (as a referential DP is identified as sharing reference with the subject in Spec, ν P). The event participants as a result are now fully identified, and the ν P can be considered sufficiently referentially specific (i.e. able to refer to an event in time). The interpretability of anaphoric features plays a role here, in the sense that uninterpretable features would never enter the calculation of determining referentiality (either of a DP or consequently of a ν P); they are by definition irrelevant for referentiality and will not participate in this kind of movement-to-edge.

5.2.4 Movement of Anaphoric ϕ -features

We are now at the final stage in our discussion toward deriving the PAPA. We established the properties of ν P phases as (degrees of) specific reference to events, where event specificity depends on two distinct but related notions—telicity and reference to all event participants—both of which have been previously described to interact in ways relevant to our proposals here. We then showed how this view of event reference dovetails with approaches to anaphora, providing a possible explanation for the movement of anaphors to the edge of ν P (as proposed by R&VW). The PAPA of course extends this proposal to all anaphoric ϕ -features (not simply object anaphors), which brings us to the present question: why do anaphoric ϕ -features, even when they are not the object arguments of a verb (and, therefore, not always appearing in the same structural position as objects), show these same PAPA properties of valuation after movement to the edge of ν P. That is to say, why do anaphoric ϕ -features behave like anaphors, even when they aren't arguments themselves?

In what preceded we built the argument that event completeness is a key to why anaphors are raised to the edge of ν P. That is to say, it is not just that anaphors need a referent, but also that unvalued anaphoric ϕ -features lack reference, and therefore events containing anaphoric feature sets are incomplete, underspecified events. This leaves us at the following set of conclusions regarding anaphoric ϕ -features: they are probes, being sets of unvalued features that will be valued by Agree, but they are not *just* probes. In a sense they are also an instruction to the grammar of the event to “become more referential.” Or, better, to “find a referent,” or more so, “become referentially complete.”²¹

²¹ Note that we do not mean to imply that all anaphoric predicates are telic—telicity effects are much more slippery than this, as being dependent both on the semantic properties of lexical

The extension we have to make is to claim that interpretable, unvalued φ -features at the edge of any phase (not just at the edge of DPs) that are accessible to the higher ν P results in that ν P being interpreted as referentially incomplete. We presume that this is because in these instances there is some kind of unresolved interpretive question in the descriptive content of that ν P that is underspecified (that will therefore make up the descriptive content of the event). In a sense the movement of anaphoric φ -features to the edge of ν P is altruistic movement—the derivation of an event cannot converge if it is underspecified, and interpretable, unvalued φ -features are (on their own) not meaningful, that is to say, their reference is still unsettled as long as they are not directly (derivationally) linked to the ν P phase itself.

6 Supporting Evidence: CA in Kipsigis

Support for this analysis comes from recent work on a similar construction in Kipsigis, a Nilotic language of Kenya. Kipsigis is a verb-initial language with canonical VSO word order, but with relatively flexible word order after the verb.²² As in Lubukusu, a declarative-embedding complementizer in Kipsigis can agree with the matrix subject:

- (34) Kipsigis (Diercks & Rao 2017:4)
ko-o-mwaa o-lɛ ko-Ø-ruuja tuya amut
PST-2pl-say 2pl-C PST-3-sleep cows yesterday
'You (pl) said that the cows slept yesterday.'

Diercks & Rao refer to this as Subj-CA (CA targeting the subject) for reasons that will become clear momentarily. Kipsigis Subj-CA generally displays similar patterns to Lubukusu: agreement is controlled by the matrix subject and not the embedded subject, matrix non-subjects cannot control the agreement, and only the most local superordinate subject can control agreement (Rao 2016; Diercks & Rao 2017). Also, as in Lubukusu, there is a complementizer drawn from the paradigm of agreeing complementizers that can be used in non-agreeing contexts:

verbs as well as on higher aspect. Rather, we mean to say that more specific event reference is triggered by movement to the edge of the syntactic phase referring to that event (ν P), and that anaphora can be explained by the same movement.

²² Most of the data reported here come from Rao 2016 and Diercks & Rao 2017, data that do not come from in those works are noted as coming from field notes.

- (35) Kipsigis (Diercks & Rao 2017)
ko-a-mwaa kɔɛ ko-ruuja tuya amut
PST-1sg-say that PST.3-sleep cows yesterday
'I said that the cows slept yesterday.'

Kipsigis Subj-CA also carries an interpretive effect as compared to the non-agreeing complementizer, which Diercks & Rao (2017) analyze as signaling that the proposition denoted in the embedded clause is the main point of the utterance (MPU).

Kipsigis offers several interesting facts that are well-explained by the anaphoric agreement analysis offered here (and quite puzzling otherwise). First, complementizers may overtly raise in the main clause, and second, there is an object-oriented agreeing morpheme that can also occur on the complementizer that is mysterious under an approach like that in Diercks 2013, but well-explained under the approach set forward here. To illustrate the first, we point to a phenomenon that Kawasha (2007) refers to as “verb ellipsis,” where the matrix verb can be dropped, with only the complementizer introducing the complement clause.

- (36) Luchazi (Kawasha 2007: 186)
Kaha mbati ngweni ange nji-na-tav-a
then tortoise COMP1 PRO1sg SA1sg-TAM-agree-FV
'Then the tortoise said, “I agree”.'

Kawasha (2007) notes that this occurs in Chokwe, Luchazi, Lunda, and Luvale; the same occurs for some Lubukusu speakers and also occurs in Kipsigis. The verb-initial nature of Kipsigis gives us more insight into what is going on in this construction. As can be seen in (37), the complementizer may occur in the main clause, replacing the matrix verb and preceding matrix arguments:²³

- (37) Kipsigis (Diercks & Rao 2017)
kɔ-lɛ-ndʒin Kiproono ko-Ø-ruuja tuya amut
3-C-2sg.OBJ Kiproono PST-3-sleep cows yesterday
'Kiproono told you that the cows slept yesterday.'

Evidence showing the raised C behaves like a verb of sorts when raised, but not when in its normal position: as is evident in (38), a complementizer in its

²³ The main clause verb of speech is homophonous with agreeing complementizer, but the verb and the complementizer inflect differently for Obj-CA (vs verbal object clitics) so the relevant agreement paradigms show that in constructions like this the clause-initial element is indeed the complementizer.

canonical position cannot be negated (in contrast to main clause verbs), as evidenced by (38b) and (38c). But as is shown in (38d), the complementizer can bear negation when it is functioning as the main verb.

(38) Kipsigis (fieldnotes)

- a. maa-mwaa-un α-lɛ-ndʒin ko-∅-ruuja tuya amut
 NEG.1sg-tell-2sg.OBJ NEG.1sg-C-2sg.OBJ PST-3-sleep cows yesterday
 ‘I didn’t tell you that the cows slept yesterday.’
- b. *ko-α-mwaa-un maa-lɛ-ndʒin ko-∅-ruuja tuya amut
 PST-1sg-tell-2sg.OBJ NEG.1sg-C-2sg.OBJ PST-3-sleep cows yesterday
 ‘I didn’t tell you that the cows slept yesterday.’
- c. *maa-mwaa-un maa-lɛ-ndʒin ko-∅-ruuja tuya amut
 NEG.1sg-tell-2sg.OBJ NEG.1sg-C-2sg.OBJ PST-3-sleep cows yesterday
 ‘I didn’t tell you that the cows slept yesterday.’
- d. maa-lɛ-ndʒin ko-∅-ruuja tuya amut
 NEG.1sg-C-2sg.OBJ PST-3-sleep cows yesterday
 ‘I didn’t tell you that the cows slept yesterday.’

We assume that there is a null verb of speech on Kipsigis that occurs in these constructions (and other languages with similar constructions). When the complementizer undergoes movement into the main clause, if the main verb is null it presumably allows for m-merger with the raised complementizer (at the edge of *vP*), resulting in the complementizer appearing in the main clause. The details are not important for our present purposes, however—the fact that agreeing complementizers can appear *overtly* in the main clause is strong evidence that the subject-agreeing complementizers can agree with matrix subjects precisely because they have raised in to the main clause (as we have proposed above).

A second argument comes from the fact that agreeing complementizers in Kipsigis may also bear *object-oriented* agreeing morphemes as well (Obj-CA).

(39) Kipsigis (Diercks & Rao 2017)

- ko-i-maa-an i-lɛ-ndʒan ko-∅-it layok
 PST-2sg-tell-1sg.OBJ 2sg-C-1sg PST-3-arrive children
 ‘You (sg) DID tell me that the children arrived.’

Obj-CA can only be triggered by matrix objects, not matrix subjects, and it is ‘optional’ in the sense that it is not always present. There is no default form of Obj-CA; when Obj-CA doesn’t occur the morpheme is simply absent (notably,

this is different from Subj-CA, which shows default agreement in impersonal constructions). And most notably for our point here, Obj-CA can *only* occur when Subj-CA is present; Obj-CA is unacceptable on a non-subject-agreeing complementizer, as shown in (40):

- (40) ko-ɑ-mwaa-un ɑ-le-ndʒin/*kɔle-ndʒin ko-Ø-it tuya amut
PST-1sg-tell-2sg.OBJ 1sg-C-2sg/*C-2sg PST-3-arrive cows yesterday
'I told you that the cows arrived yesterday.'

These facts raise hard questions—even if the properties of Subj-CA in the languages that have it can be explained via an anaphoric explanation, to our knowledge there are not any purely object-oriented anaphors. How, then, can Obj-CA be explained? Diercks & Rao (2017) suggest that this set of facts is consistent with an analysis that Obj-CA is a clitic-doubling operation (a clitic on the complementizer doubling the matrix object), whereas Subj-CA is simply an agreement morpheme. But it is completely unclear how a clitic-doubling operation is possible on a complementizer embedded within a complement clause, unless that complementizer at some level of the derivation raises to a level higher than the matrix object (which is precisely what we have suggested in this paper). Notably, Obj-CA is only possible on complementizers with Subj-CA, which is exactly what is expected if it is only those complementizers that have raised into the main clause.

A full exploration of the mechanics of the Kipsigis Obj-CA construction go beyond the scope of this paper. It should be clear that these two sets of Kipsigis facts—the possibility of complementizers overtly raising into the main clause, and Obj-CA patterns—are largely consistent with an analysis where upward-agreeing complementizers raise into the main clause, and quite difficult to explain otherwise.

7 Other analyses of Lubukusu CA

In recent work, Carstens (2016) has argued against Diercks' (2013) analysis that Lubukusu CA is anaphoric, claiming instead that upward-orientation is a standard and generalizable property of Agree. She proposes that the ϕ -features on the Lubukusu C° head are forced to seek valuation higher in the structure because probing of their own c-command domain has failed. Carstens terms this process delayed valuation, and posits two different mechanisms by which it may happen:

- (41) Directionality-Free Mechanics of Delayed Valuation (Carstens 2016: 3)
uF with no match in its c-command domain can be valued:
1. Ex situ, by raising into locality with a matching feature, OR
 2. In situ, by the closest matching feature within the same phase

The ex situ valuation is similar to R&VW's proposal that we utilize here, and is a version of Boskovic's (2007b; 2011) proposal where unvalued features of a moving item drive its movement. The *in situ* valuation, on the other hand, shares much conceptually with Bobaljik and Wurmbrand's (2005) notion of feature valuation within agreement domains. Carstens uses this notion of delayed valuation of features to explain a range of feature-valuation operations.

With respect to Lubukusu CA, this is a similar sort of proposal to the one that we advocate here. The difference boils down to whether this Lubukusu CA is viewed as anaphoric, and as such bears distinct qualities from non-anaphoric feature valuation, or whether Lubukusu CA is instead indicative of the general properties of non-anaphoric feature valuation. Carstens (2016) connects the Lubukusu CA facts with a broad variety of other feature-valuation facts like Case-valuation, concluding (like we do here) that there is simply one feature valuation operation, namely, Agree. In order to explain the upward-orientation of Agree, however, she adopts a view similar to Béjar & Rezac (2009), namely, that a failure of downward probing triggers an upward-oriented valuation operation, which may include either movement or valuation by a higher element within the same phase. Our analysis, on the other hand, proposes a particular kind of behavior of unvalued, interpretable feature sets that is connected to anaphoric phenomena; interpretable, unvalued features will move to a phase edge and probe from that position. Essentially, while both Carstens' proposal and the one advanced here maintain that only a single feature-valuation mechanism is necessary in the syntax, Carstens liberalizes the Agree operation more generally, whereas we link the movement and valuation to a distinct, derivative kind of feature valuation—namely, anaphoric feature valuation—which is a composite of two (already-available) syntactic operations.

What evidence could distinguish these proposals? One relevant area is the availability of CA in Lubukusu in instances of raising to object, as shown in the example below:

- (42) Lubukusu (Justine Sikuku, pc)
N-enya Barack Obama n-di a-khil-e.
1sgS-want 1Barack.Obama 1sg-that 1S-win-SBJ
'I want Barack Obama to succeed.'

If we are to adopt a relatively uncontroversial assumption that the embedded subject raises to an object-licensing position in the main clause (perhaps AgrO below vP), the account we propose here explains the non-intervention of the raised object in the CA relation naturally because the unvalued, interpretable features of the complementizer adjoin to vP. However, this example is problematic for Carstens as on her account upward probing is only the result of the failure of downward probing. Presumably, however, if the lower clause is permeable for raising of the object, it should not be a phase and hence should also be permeable for probing by the complementizer head. Carstens claims that objects in RtO constructions like those in (42) (i.e. those that raise across an agreeing complementizer) are A'-moved into the matrix clause (following Bruening's 2001 analysis of raising to object), and that the lower clause is indeed a phase in these instances. We assume, in contrast, that such elements are in fact A-moved, which is supported by the fact that such objects can participate in standard object marking constructions (assumed to be an A-relation, as only arguments can be object marked; Diercks 2011; Sikuku, Diercks & Marlo to appear. The example in (43a) shows that an RtO object can be object marked, and (43b) shows that a DP object in an RtO construction may be (clitic-)doubled by an OM.

(43) Lubukusu (Justine Sikuku, pc)

- a. E-mu-enya n-di a-khile
1sgS.PRS-1OM-want 1sg-that 1S-win-SBJ
'I want him to succeed.'
- b. E-mu-enya Barack Obama ndi a-khile.
1sgS.PRS-1OM-want 1Barack.Obama 1sg-that 1S-win-SBJ
'I DO want Barack Obama to succeed.'

The availability of object marking objects in RtO contexts argues against an A'-movement account of raised objects. Rather, this suggests that raising to object is in fact A-movement, in which case the embedded CP should not be a phase boundary and should not cause failure of a downward-oriented probe on C°, raising questions for Carstens' account as to why the C° head still is upward-oriented in its valuation in (43b).

8 Conclusions and Open Questions

The primary issue we sought to explore in this paper was whether or not a universal direction of Probing in Agree-relations could be established cross-linguistically.

Recent proposals have suggested that constructions exist in various languages exhibiting both upward- and downward-oriented probing of Agree, and others have suggested that only upward probing exists. This paper makes a broad argument from a narrow empirical domain—complementizer agreement—considering the properties of CA in Dutch dialects (Germanic) and Lubukusu (Bantu). Pre-theoretically, there are clearly both upward- and downward-oriented agreement patterns; the question becomes what feature valuation mechanisms are necessarily a part of Universal Grammar. In §2 and §3 we demonstrated that these agreement phenomena cannot reduce to a single, unified syntactic operation (= Agree); however, in §4 we make the case that this situation does not necessitate the inclusion of additional grammatical operations to license CA in Lubukusu. We propose, following Rooryck & Vanden Wyngaerd (2011), that anaphoric relations such as those found in Lubukusu CA are realized via a composite operation of Internal Merge + downward-probing Agree. On this account, clearly divergent agreement relations can be explained using the same feature valuation operation, with the added component that anaphoric feature bundles must move before they can be valued (the PAPA = Principle for the Anaphoric Properties of Agreement).

In §5 we proposed a motivation for raising interpretable, unvalued features to the edge of a phase; this discussion called on recent approaches to the referential interpretation of phases and the effects on specificity of reference by movement to the edge of phases.

There remain many questions that we are unable to address in a paper of this size. For example, while we have specifically claimed that the interpretive effects of upward-oriented CA are a consequence of the anaphoric feature sets containing interpretive features, we have not provided a specific outline of *how* these are derived.²⁴ And perhaps the largest standing question in our proposals is the issue of delayed valuation. The PAPA requires that anaphoric φ -features be adjoined to vP and being valued by the subject in that position, and we have laid out an extensive line of reasoning based on the PR model of syntax for why this is a reasonable proposal. But we did not fully explain why Lubukusu φ -features on C cannot probe their c-command domains from their base positions. A possible explanation may arise from the relative economy of doing this valuation at the superordinate vP edge, with the result that there is some sense in which underspecified reference must be resolved at phase edge by the very nature of the syntactic

²⁴ In previous version of this paper we proposed that the interpretation of interpretable, unvalued φ -features is essentially that of an intensifier, and proposed a way in which intensifiers on CP might create similar kinds of interpretive effects to Lubukusu CA when they arise on a specific indefinite CP (whose interpretation is generated via choice function). Space does not allow us to lay those ideas out here.

architecture of phases (as this is where reference is established/managed; this is not inconsistent with Chomsky's 2008 claims about other phi feature valuation). At present, however, the precise issue of delayed valuation remains among the standing questions.

Looking forward to future work, there is a clear testable prediction that arises from this account, which is that anaphoric feature valuation (i.e. instances of surface downward valuation or apparent upward probing) ought to have interpretive effects, as they are rooted in interpretable, unvalued features. We showed that this was the case for Lubukusu/Kipsigis vs. Germanic CA, where Lubukusu/Kipsigis CA influenced interpretation of a sentence whereas Germanic CA is simply a case of feature covariance. This prediction is laid out in (44):

- (44) Anaphoric Agreement Corollary
Upward-oriented agreement relations will have interpretive effects.

The Anaphoric Agreement Corollary could well explain the tendency of the Upward Agree theorists to rely on evidence from domains such as negative concord and sequence of tense, whereas the downward Agree theorists tend to focus on issues of (uninterpretable) phi-feature agreement, though we leave a full evaluation of this prediction for future work (cf. Bjorkman and Zeijlstra 2014 and Preminger 2013).

With respect to the discussion of the directionality of Agree, we conclude that unvalued features only probe down. This does not deny, however, that there are instances of feature valuation where the valuer is structurally higher than the valuee, only that such instances are not instances of 'pure' Agree, but instead are derived by movement followed by Agree. The result, therefore, is broad reaching in providing support to a feature-valuation analysis of anaphors, in providing theoretical backstopping to the relatively common proposal that anaphors raise into their predicate (or into a local relationship with their antecedent) in order to ensure valuation/co-reference with that antecedent, and also in arguing that upward probing of Agree is an unnecessary component of the grammar, accomplished instead by anaphoric mechanisms that are quite general. The second part of the paper provides a first proposal for a Phase Reference model of vPs as event reference and proposed a range of ideas regarding both how this applies in basic instances, but also how this relevantly explains aspects of the Lubukusu CA puzzle. Clearly much research remains in all these domains—theories of Agree, documentation of CA cross-linguistically, and the development of the Phase Reference model—but the proposals here contribute to our current understanding of all three.

Abbreviations

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