

RESEARCH

Subject and non-subject *ex-situ* focus in DagbaniSamual A. Issah^{1,2} and Peter W. Smith¹¹ Goethe-Universität Frankfurt, Frankfurt am Main, DE² University of Education, Winneba, GHCorresponding author: Peter W. Smith (p.smith@em.uni-frankfurt.de)

This paper offers a description and account of the patterns of *ex-situ* focus in Dagbani. We show that there are two syntactic strategies for creating *ex-situ* focus in the language, one involving A'-movement to the left periphery, and the second involving base generation in the left periphery combined with coreference to a resumptive pronoun. Furthermore, we argue that subjects are difficult to move from Spec,TP to Spec,CP in the left-periphery because of *anti-locality*, which creates a tension when trying to focus subjects, which are required to derivationally fill the specifier of both positions. We further show that what looks to be a two-way distinction between the behaviour of subjects and non-subjects in the language is in fact a three-way distinction between subjects that are focussed to a local left-periphery, subjects that are focussed to a non-local left-periphery, and non-subjects. These distinctions arise due to there being two methods for Dagbani to resolve the antilocality problem of subject movement, and so local subjects solve the problem differently to non-local subjects.

Keywords: Focus movement; antilocality; resumptive pronouns; subject-only resumption

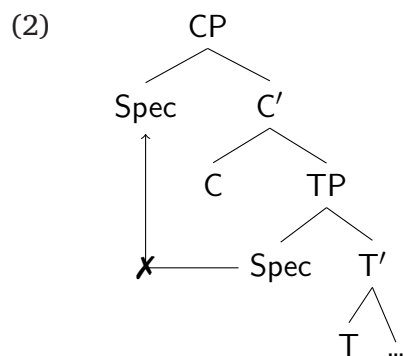
1 Introduction

Subjects are difficult to move. This much has been known for a long time, with various attempts to derive the effect, such as the Empty Category Principle (Chomsky 1981), Relativised Minimality (Rizzi 1990), and Criterial Freezing (Rizzi & Shlonsky 2007). Recent years have seen a renewed interest in these effects, coupled with approaches that try to subsume the problem under *antilocality*, the notion that movement cannot be too short (Grohmann 2003; Schneider-Zioga 2007; Erlewine 2016; Bošković 2016; Douglas 2017). Whilst there are different conceptions of anti-locality, one line of thinking is what Erlewine (2016), terms *Spec-to-Spec Anti-Locality*:¹

- (1) Spec-to-Spec Anti-locality
A'-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

A prohibition on movement such as this is particularly relevant for the case of subjects. Supposing, as is fairly standard, that subjects canonically lie in Spec,TP (for more discussion on multiple positions within TP, see among others Bobaljik & Jonas 1996 and McCloskey 1996b), then if (1) holds, a subject will not be able to move from that position to the specifier of (the lowest projection of) CP, since that movement will be too short:

¹ (1) is a descriptive statement, see Bošković (2016) and Douglas (2017) for attempts to derive it through the labeling mechanism of Chomsky (2013). It should also be noted that this version of antilocality differs from others that are on the market. Rather than give an overview here, we refer the reader to Grohmann (2011) for an overview. We will assume throughout this paper that something akin to (1) holds at least for movement from Spec,TP.



Support for some version of the prohibition on movement such as (1) comes from well known observations regarding subject movement, such as *anti agreement-effects* (Ouhalla 1993; Richards 1997; Schneider-Zioga 2007), where agreement that would be expected does not arise. For instance, in the following Berber examples, *wh*-extraction of the subject does not allow for the otherwise expected subject agreement morphology on the verb.²

- (3) *Berber*, Ouhalla (1993: 479)
- a. Man tamghart ay yzrin Mohand?
 which woman C see.PART Mohand
 ‘Which woman saw Mohand?’
 - b. *Man tamghart ay t-zra Mohand?
 which woman C 3.F.SG-saw Mohand?

A clear line of analysis of this effect is that agreement is triggered once the subject moves to Spec,TP. Agreement is missing in the second example because the subject has not moved to Spec,TP at any point, but rather has moved directly to Spec,CP. In the case of A'-movement then, it seems that languages that display this effect avoid Spec,TP, ostensibly to avoid being stuck there and unable to move into the left periphery.

Whilst it is important to retain a healthy degree of academic scepticism around the formulation of anti-locality in (1) — there are various formulations of antilocality on the market, and (1) is certainly one of the more strident formulations³ — it makes clear, testable predictions, and allows us to follow well defined analytical paths. To our eyes, then, it is more than worthy of further attention. It is our aim in this paper to investigate restrictions on subject A'-movement further, specifically through looking at *ex-situ* focus in Dagbani, a Mabia language spoken in northern Ghana.⁴ As we will show, Dagbani presents an interesting, and to some degree unique, cluster of properties that bear on the question of subject movement and related matters. Along the way, we will take (1) as being a genuine constraint on movement, and explore what this means for the derivation of focus constructions in Dagbani.

Specifically, we propose that in Dagbani, focus movement of subjects is complicated by a requirement that Spec,TP cannot be skipped in the way outlined above for Berber; that is, the EPP is a strong requirement in Dagbani and cannot be ignored (*c.f.* Adesola 2010 for Yoruba). Since *ex-situ* focus is analysed as movement of the focalised element to the left periphery of the clause, this entails that focussed subjects will necessarily behave differently to other arguments when under focus. We will show that this leads to there being two strategies for *ex-situ* focus of subjects, both used in Dagbani. The first strategy is movement of the focussed element to the left-periphery. The second strategy, used by embedded subjects

² Throughout this paper, unless otherwise indicated, all example sentences come from our own consultation with native speakers of the relevant languages.

³ Not necessarily a bad thing, of course.

⁴ The Mabia languages are also referred to in other places as the Gur languages.

when moving to a non-local CP, a resumptive pronoun is generated in the lower clause, fills Spec,TP, and is then linked to the focussed element in the matrix left periphery. As we will show, this avoids antilocal movement of the subject because the item filling the embedded Spec,TP does not move beyond that point.

Regarding matrix subjects (and more generally, local subject movement — see below), we propose that Dagbani has innovated a more complex left-periphery to enable the matrix subject to circumvent the restriction in (1), such that the focussed subject can cross some phrase other than TP. In such instances, we propose that the CP is replicated on top of the existing CP, creating a complex shell structure (see for related proposals Iatridou & Kroch 1992; Watanabe 1992; Browning 1996). Previewing the discussion below, we will propose that focussed elements that are not locally moved subjects move to Spec,CP in (4), whereas subjects that move locally must use the landing site in (5). We will discuss this more complicated structure, and justify it in further detail below. A crucial piece of analysis in favour of our account is that one can morphologically distinguish between the two structures in Dagbani, since locally moved subjects appear with one focus marker, and all other *ex-situ* foci appear with a different one.

- (4) $[_{CP} \text{ Non-local subject}_{[uFoc]} [_{C'} C_{[iFoc]} [_{TP} \text{ Subj } [_{T'} \dots [_{TP} t_{Subj} \dots]]]]]]]$
 (5) $[_{CP} \text{ Local subject}_{[uFoc]} [_{C'} C_{[iFoc]} [_{CP} [_{C'} C_{[iFoc]} [_{TP} t_{Subj} [_{T'} \dots]]]]]]]]]]]$

The paper is organised as follows. In section 2 we discuss background information to Dagbani, including its relevant syntactic characteristics. In section 3 we discuss how matrix subjects, embedded subjects and non-subjects all differ in relation to focus movement in Dagbani, showing that what has been thus far characterised as a two-way distinction between argument types (Fiedler et al. 2010; Issah 2012) is actually a three-way distinction that distinguishes local subject movement, non-local subject movement, and movement of other arguments. Section 4 discusses how embedded subjects differ from non-subjects, and shows that underneath this three way distinction lie two different strategies used in *ex-situ* focus in Dagbani, a movement strategy and a resumption strategy. In section 5 we return to the issue of locally focussed subjects, and show that they are forced into a different position altogether from the other elements in Dagbani. Section 6 compares the account with recent proposals for subject specific behaviour where it is proposed that C and T can be bundled on a single head (Bennet, Akinlabi & Connell 2012; Martinović 2015; Erlewine 2018), and we show that such an analysis is not appropriate for Dagbani. In this section we will also discount other potential analyses. We conclude the paper in section 7.

2 Dagbani: Background information

Dagbani is a Mabia (Gur) language spoken in northern Ghana. It belongs to the Oti-Volta sub-family of the Niger-Congo language family. The language has three major dialects; the Eastern dialect (Nayahali) which is spoken in and around Yendi; the Western dialect (Tomosili), spoken within Tamale and its surroundings and the Nanuni dialect spoken in Nanuɔ (Issah 2008; Hudu 2010). These dialects are mutually intelligible and differences among them are mainly based on tonal variation and a few lexical differences. There are approximately two million speakers of Dagbani predominantly found in the Northern part of Ghana. It is genetically related to languages such as Kusaal, Mampruli, Dagaare, Gurene and Safaliba.

Its basic argument alignment is rigidly SVO, with mostly analytic verbal morphology.

- (6) a. Abu tú bíá máá.
 Abu insult.PERF child DEF
 ‘Abu has insulted the child.’

- (9)
- a. Abu ní dá búkù máá.
Abu FOC buy.PERF book DEF
'ABU bought the book.' (subject focus)
 - b. *Abu kà dá búkù máá.
Abu FOC buy.PERF book DEF
intended: 'ABU bought the book.' (subject focus)
 - c. Búá máá kà Abu dá.
goat DEF FOC Abu buy.PERF
'Abu bought THE GOAT.' (object focus)
 - d. *Búá máá ní Abu dá.
goat DEF FOC Abu buy.PERF
intended: 'Abu bought THE GOAT.' (object focus)

Though we will diverge from this viewpoint, for reasons that will become clear shortly (see section 3.2), the view up to now taken in the literature (for instance Issah 2012; 2015) is that the distribution of the focus markers is determined by grammatical role. That is, *n* combines with subjects in focus, and *ka* combines with all other focussed elements. This is supported by the fact that a similar division of focus markers apparently dividing subjects and other arguments is seen in related Mabia languages.⁶ For instance, the following from Gurene (Dakubu 2003) shows that there is an optional focus marker *n* which marks focussed subjects, and another marker *ti* used to mark non-subjects.

- (10) *Gurene*, Dakubu 2003: 4
- a. Á-ni n zàa nyé bódáa lá?
a-WH FOC yesterday see man DEF
'Who saw the man yesterday?'
 - b. Á-ni ηmè ?i?
a-WH beat 3SG.INT
'Who beat him?'
 - c. Bá-ni tì fù nyε?
ba-WH FOC 2SG see
'Who (what group) did you see?'
 - d. Lèg-kú-nì tì fù nyε?
thing-ku-WH FOC 2SG see
'Which thing did you see?'

We illustrate with two further examples, both Gur (Mabia) languages. Firstly, Kusaal (Abubakari 2016):

- (11) *Kusaal*, Abubakari (2016)
- a. Múi kà bà sá dī.
rice FOC 3PL PST eat
'It is rice that they ate yesterday (not beans).'
 - b. Dáú lá ní dā' búóg lá.
man DEF FOC buy goat DEF
'It is the man that bought the goat (not the woman).'

Secondly, (the Pisaali dialect of) Sisaali (Dumah 2016):

⁶ See also Leffel (2011) for a similar situation in genetically non-related Masalit.

- (12) *Sisaali*, Dumah (2016: 6–7)
- a. Duma yɔbɔ loori.
Duma buy car
'Duma has bought a car.'
 - b. Duma rɛ yɔbɔ loori.
Duma FOC buy car.
'It is Duma who bought a car.'
 - c. Emma nyɔɔɔ daasi.
Emma burn sticks
'Emma burnt sticks.'
 - d. Daasi nɛ Emma nyɔɔɔ.
sticks FOC Emma burnt
'It is sticks that Emma burnt.'

This is not an exhaustive list of languages with this property and we refer the reader to Kalinowski (2015) for a more comprehensive survey of focus marking in African languages, where the Mabia languages are included in the survey.

Returning to Dagbani, it is important to stress that *ka* and *n* are focus markers, since they only appear in contexts of new information focus (questions, answers, contrastive focus *etc.*). A reviewer questions whether they could be markers that indicate any A'-dependency. We claim that they are not, which can be shown by the following sentences, all canonical instances of A'-movement, but not focus. As can be seen, *n* and *ka* do not show up in relative clauses, tough-movement constructions, or in comparative clauses.

- (13) a. Bía_i sò (*ń) ñùn t_i kpí máá.
girl REL FOC who die DEF
'The girl who has died.'
- b. Chèché_i shèlí (*kà) á nì nyá t_i máá.
bicycle REL FOC 2SG PRT see.PERF DEF
'the bicycle that you have seen.'
- (14) a. Neindoo yòhím-bú bì tó.
Neindoo please-NMLZ NEG hard
'It is easy to please Neindoo.' Lit: Neindoo is not hard to please.
- b. Gbáj ñò nyá-bú tó.
book this see-NMLZ hard
'It is difficult to get this book.'
- c. Mùgìsìgú ñó màlí-bú tó.
problem this solve-NMLZ hard
'This problem is hard to solve.'
- (15) a. Nírìbá kana gàrí tí nì dì tèhí shém.
people come pass 2PL PRT PST think way
'More people have come than we had expected.'
- b. Chentiwuni vâlím gàrí má.
Chentiwuni smart pass me
'Chentiwuni is smarter than me.'

Note that with the last two instances, tough-movement and comparative clauses, respectively, it is not immediately apparent that A'-movement is involved at all. Relative clauses,

however, do seem to involve similar properties to English, and they do not allow for *n* and *ka*. We leave a fuller investigation of A'-movement in Dagbani for future work, but it suffices to note here that *n* and *ka* are focus markers, and not general indicators of an A'-dependency.

As we have seen, *n* and *ka* appear to mark whether a subject or a non-subject has been focussed. Further evidence of a split between subjects and non-subjects can be seen in the behaviour of the two classes with regards to *in-situ* focus. Focussed subjects are not allowed to appear *in-situ*, whilst all other elements are. It is easy to see that *in-situ* focus is possible with non-subjects. We see that (16-b) can serve as the answer to the question in (16-a), when the object is left in its base position.⁷

- (16) a. Bò kà ò dú?
 What FOC 3SG climb.PERF
 'What has s/he climbed?'
 b. Ò dú lá kúyú.
 3SG climb.PERF FOC stool
 'S/he has climbed a stool.'⁸

Since *ka* appears only in the left-periphery, and never in *in-situ* positions, we must rely on the context determining that we are truly dealing with focus here. Answers to wh-questions are generally taken to be focussed since they contain new information. Thus, movement to the left periphery is not obligatory for Dagbani focus.⁹ It is difficult to show that subjects do not allow for *in-situ* focus. With subjects, movement to the left-periphery is string vacuous; the canonical subject position is Spec,TP and already the leftmost element of the focus. However, one of the characteristics of *in-situ* focus in Dagbani is that the focus marker cannot appear with the *in-situ* focus. Thus, in (16-b), the sentence would be ungrammatical if *ka* were to accompany the object. We can utilise this property for subjects. If subjects were allowed to remain *in-situ* under focus, we would expect that they can appear without the focus marker, even when interpreted as in focus. The following pair of examples demonstrates that, leaving the subject in its base position without a focus marker yields a grammatical sentence, however the sentence is infelicitous in the context.

- (17) a. Ɔ̀̀nì ní cháj púú máá ní?
 who FOC go.PERF farm DEF LOC
 'Who has gone to the farm?'
 b. #Tòhá máá cháj púú máá ní.
 hunter DEF go.PERF farm DEF LOC
 'The hunter has gone to the farm.'

The interpretation of the sentence is infelicitous in this example. Thus, the focus marker is obligatory for subjects when in focus, and we take this to mean that *in-situ* focus is not possible for subjects, in contrast to other elements in the sentence, and that subject foci necessarily move to a left-peripheral position. There is no material that can intervene between the focussed subject and the position of tense. Adverbs that are traditionally used to delimit TP, such as *finally* (McCloskey 1996a) appear to the right of the tense morpheme in Dagbani:

⁷ It is no coincidence that the question formation in (16-a) uses the same focus morpheme: question formation with q-words moved to the left-periphery and *ex-situ* focus are formed in the same way in Dagbani.

⁸ *lá* is another focus marker in Dagbani, that appears only *in-situ* for objects, adjuncts and VPs. It is not obligatory for *in-situ* object foci. A fuller discussion of *lá* as a focus particle is given in Issah (2018), to which we refer the reader.

⁹ The example in (16) can alternate with the *ex-situ* variant. Whilst there are possibly subtle differences between the two (*ex-situ* tends to express exhaustivity or surprise), they do not factor into our discussion here and we ignore the distinction between the two.

- (18) a. Ɔ́úńí ń ò ò bàhí dá lóòrì?
 who FOC PST finally buy.PERF car
 ‘Who has finally bought a car?’
- b. Bò ká Napari ò ò bàhí dá?
 what FOC Napari PST finally buy.PERF
 ‘What did Napari finally buy?’

Thus, it is not possible to show that the subject moves to the left-periphery using this test, but we take the presence of a focus particle to the right of the subject to indicate that it has moved to the specifier of CP.

Dagbani is thus a language where focus can be optionally *ex-situ* or *in-situ* which is somewhat frequently attested in the languages of West Africa (see Hartmann & Zimmermann 2007a on Tangele; Hartmann & Zimmermann 2007b on Hausa; Hartmann & Zimmermann 2009 on Guruntum; and Hartmann & Zimmermann 2012 on Bura). As to why Dagbani allows both *in-situ* and *ex-situ* focus is doubtless an interesting question, but not one that is of concern to us here, and for a discussion we refer the reader to Issah (2018). For now, let us simply assume that whatever is responsible for driving movement to the left periphery is optionally present or operational in Dagbani, and thus, with certain exceptions, focussed elements are only sometimes compelled to move to Spec,CP.

In certain respects, some of this behaviour is not all that surprising. It has already been noted in the literature (Fiedler et al. 2010) that languages in the west African region (Dagbani being one of the languages in their study) show special behaviour regarding putting subjects into focus. Specifically, Fiedler et al. show that languages in this region mark focus on subjects differently and/or more robustly than on other elements, like objects or adjuncts. Dagbani is no exception here: subject focus is obligatorily marked, and it uses a different focus marker to other elements. Furthermore, it is not possible to focus subjects *in-situ*, which is possible for other elements.

Ex-situ focus always involves the focussed element appearing at the left edge of the clause, where it is followed by a focus marker, which as we have seen, varies according to the role of the focussed element. The element in the left periphery appears to be in that position by virtue of having moved there from its base position. This can be easily seen for objects, whose clause initial position contrasts with the regular position of objects, as well as the fact that when they are in this position, a focussed interpretation (with concomitant marking) is obligatory. Furthermore, we can see that this is a movement dependency because it is sensitive to island constraints. Consider the following example, where the focus is intended to lie only on one part of a coordination. It is not possible to move the conjunct to the left periphery and leave the rest of the coordination behind, which is a simple violation of the coordinate structure constraint (Ross 1967).

- (19) a. *Abu_i kà Wumpini nyá t_i míní Chentiwuni.
 Abu FOC Wumpini see.PERF and Chentiwuni
intended: ‘Wumpini saw ABU and Chentiwuni.’
- b. *Chempang_i kà Abu nyá Napari míní t_i.
 Chempang FOC Abu see.PERF Napari and
intended: ‘Abu saw Napari and CHEMPANG.’

It is also not possible to move part of a coordination that lies in the subject position to the left periphery where it would combine with a focus marker.¹⁰

¹⁰ Foreshadowing the discussion later on a little, it should be noted that it is not possible to use a resumptive pronoun in either (19-a) or (20-a) to mitigate the island effect, which is possible with embedded subjects, as we will shortly discuss.

- (20) a. **Abu_i ní t_i míní Chentiwuni dá lòdrí.*
 Abu FOC and Chentiwuni buy.PERF a.car
 ‘ABU and Chentiwuni bought a car.’
- b. **Chentiwuni_i ní Abu míní t_i dá lòdrí.*
 Chentiwuni FOC Abu and buy.PERF a.car
intended: ‘Abu and CHENTIWUNI bought a car.’

Instead, if one wants to focus part of a coordination, then the focus marker must appear to the right of the entire coordination, even if only one of the conjuncts is in focus.

- (21) a. *Napari míní Mbangba kà tí sà pùhí.*
 Napari and Mbangba FOC 1PL PST greet.PERF
 ‘We greeted NAPARI and Mbangba yesterday.’
- b. **Napari kà míní Mbangba tí sà pùhí.*
 Napari FOC and Mbangba 1PL PST greet.PERF
intended: ‘We greeted NAPARI and Mbangba yesterday.’
- (22) a. **Napari ní míní Wumpini dá lòdrí.*
 Napari FOC and Wumpini buy.PERF lorry
intended: ‘NAPARI and Wumpini have bought a lorry.’
- b. *Napari míní Wumpini ní dá lòdrí.*
 Napari and Wumpini FOC buy.PERF lorry
 ‘NAPARI and Wumpini have bought a car.’

So, whilst the conjunction can move as an entire unit, a single conjunct is not free to move alone.

There are of course various ways in which movement could play a role in the creation of *ex-situ* focus. There are known to be African languages which use a clefting strategy in focus constructions, such as Yoruba (Adesola 2005). A key diagnostic of such languages is that the element that occurs when making a focus construction is used elsewhere as a verbal element. However, in Dagbani, there is no evidence to suggest that a clefting strategy is employed in the contexts under discussion. The existential verb in Dagbani is *nyé*, and not one of the markers that is used in focus contexts:

- (23) *Bé nyéla kárimbíhí.*
 3PL COP students
 ‘They are students.’

Furthermore, the focus markers can still appear in addition to the copula in a cleft construction (Hartmann & Issah 2018): Both focus markers, *ka* and *n* are used only in contexts involving focus, and do not serve any other verbal marking duty.¹¹ Thus, we assume that *ka* and *n* are focus heads in the left periphery, that both raise an element bearing focus to their specifier position.

3.2 Embedded subjects

Though characterising the split as subject vs. other captures the data that we have looked at so far, and fits in nicely with the observation of Fiedler et al., things quickly become more complicated once we factor in the behaviour of embedded subjects. Somewhat surprisingly, embedded subjects combine with *ka* instead of the expected *n*.

¹¹ There are forms with other meanings that are homophonous with these, such as the first person singular pronoun for *n* and a linker element with a meaning akin to ‘and so’ for *ka*. We assume that these instances of homophony are accidental, and do not consider them further in the remainder of the paper.

- (24) Dó só kà ní wúm nì ò dá lòdrí.
 man certain_i FOC 1SG hear.PERF that he buy.PERF car
 ‘I heard that A (CERTAIN) MAN bought the car.’

A couple of points are worth elaborating on here. The use of *n* is strictly forbidden in this case, and *ka* is the only choice. It is possible to have focus where the embedded subject moves to the intermediate CP, in which case *n* is used, and *ka* is ungrammatical.

- (25) Wumpini yèlí-yá nì Mbangba ní/*kà dá lòdrí.
 Wumpini say.PERF-DJ that Mbangba FOC buy.PERF car
 ‘Wumpini said that MBANGBA bought a car.’

However, if the embedded subject is focussed to the matrix left-periphery, it is obligatory that *ka* be used. The observation that emerges then, is that *n* is used for focus of a subject to the closest left-periphery to the subject, and *ka* is used otherwise. *n* should then be seen not as a marker of matrix subjects in focus, but rather a marker that appears when an subject in focus undergoes local movement to the left periphery (i.e. the subject is focused without crossing a clause boundary).

A second interesting observation regarding (24) is the use of a resumptive pronoun in the subject position of the lower clause. The resumptive is obligatory here. For all other types of arguments discussed above, the use of a resumptive pronoun in the position before movement is ungrammatical. Thus, non-local subject focus is unique in Dagbani in that it requires a resumptive in the place of the “moved” element, as can be seen comparing (26-a) with (26-b) and (26-c).¹²

- (26) a. Búá só_i kà ní tèhí nì *(ò_i) kpé dúú máá ní.
 goat certain FOC 1SG think.PERF C 3SG enter room DEF LOC
 ‘A CERTAIN GOAT I think that it has entered the room.’
 b. Abu ní (*o_i) dá búkù máá.
 Abu FOC he buy.PERF book DEF
 ‘ABU bought the book.’
 c. Búá máá_i kà Abu dá (*o_i).
 goat DEF FOC Abu buy.PERF it
 ‘Abu bought THE GOAT.’

A final observation regarding embedded subjects and their behaviour under focus is the fact that syntactic islands can be violated without any loss in grammaticality, such as in the embedded coordination in (27-a).

- (27) a. Chempang_i kà ín wún nì *(ò_i) míní Abu dá lòdrí.
 Chempang_i FOC I heard that he_i and Abu buy.PERF car
 ‘I heard that CHEMPANG and Abu bought a car.’
 b. Chempang_i kà Abu yèlí nì Napari mínì o_i dá lòdrí.
 Chempang FOC Abu say.PERF that Napari and 3SG buy.PERF car
 ‘Abu said that Napari and CHEMPANG bought a car.’

The ability to escape islands of non-locally focussed subjects does not just hold for coordinate structures, but rather other island effects as well, *wh*-islands and complex noun phrases in the examples below.¹³

¹² As we will see below, we do not treat this as a movement operation.

¹³ Not all islands can be escaped from, however. It is not possible to *ex-situ* focus a subject embedded from within a relative clause, even with the use of a resumptive pronoun. We are not sure why this should be the case.

Table 1: Interim Summary.

	Marker	Resumption?	Dependency across islands?
Local subject focus	n/m/ŋ	×	×
Non-local subject focus	ka	✓	✓
Non-subject focus	ka	×	×

4 Two derivations for *ex-situ* focus

We now turn to discussion of why there would be separate groupings of how elements behave under focus. We ignore for the time being local subject focus, returning to it in section 5, and concentrate our attention on the syntactic difference between non-local subject focus and non-subject focus.

From the facts above, we can identify that there are two different strategies for encoding *ex-situ* focus in Dagbani. The first of these two strategies uses syntactic movement, where the element that is in focus moves to the left periphery of the clause into the specifier of a CP. This derivation is what we propose is used for non-subject focus. In the second derivation, used for non-local subject focus, we propose that the element in the left-periphery is base generated there, whilst a resumptive pronoun fills its canonical clausal position in the embedded clause.

4.1 Movement to the left periphery

In the derivation where an element moves syntactically to the left periphery, we assume that the morpheme *ka* is the realisation of C which bears an interpretable focus feature, $C_{[iFoc]}$. The phrase which is interpreted as focussed bears an uninterpretable focus feature that must be associated with $C_{[iFoc]}$. We follow Bošković (2007); Abels (2012) and assume that the features that force movement are present on the moved element. That is, we assume that the presence of an unvalued information structural feature on the item that will be in focus, and its need for a value forces it to seek to move to the specifier of a projection association associated with a corresponding feature that is valued. The movement is driven by the need of the moved XP to probe downwards in order to obtain a value. Subjects are also compelled to move to Spec,TP in order to satisfy the EPP, and assume the same explanation underlying this (potentially due to the presence of a $[uT]$ feature on the subject Pesetsky & Torrego 2007).¹⁵ In the following sentence, where the object *búá* ‘goat’ is in focus, it has an unvalued $[uFoc]$ feature, and so moves to Spec,CP in order to get a value and license it, whereas the subject is compelled to move to Spec,TP in order to license its $[uT]$ feature. Not shown is movement of the object through Spec,vP, though it is assumed that this movement would take place.¹⁶

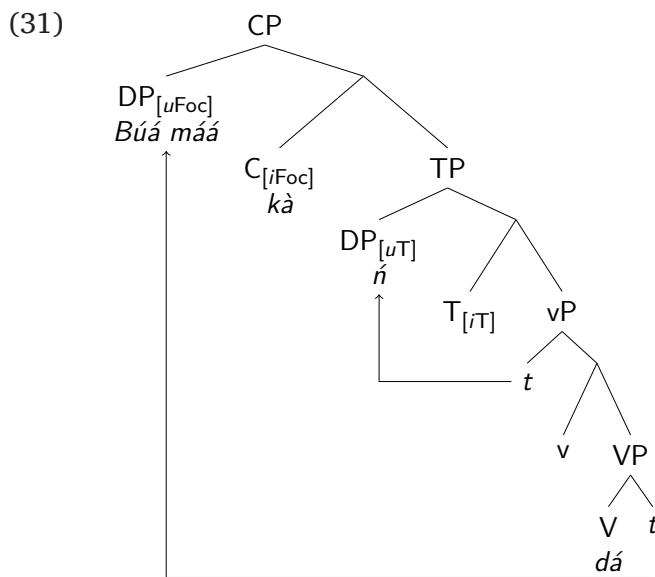
¹⁵ Throughout this paper, we have been assuming that Spec,TP is the position for subjects. However, if mood is indicated in the sentence, then there is a Mood particle to the left of the tense marker, and the subject appears to the left of the mood particle, suggesting that the subject has moved there:

- (i) Abu yì dì sà bó-r-í nímdì bé sà nààn kù tí ò lí.
 Abu COND PRT PST want-IMPERF-CJ meat 3PL PST PRT NEG give 3SG it
 ‘If Abu had wanted meat yesterday, they would not have given him.’

This suggests that it may be the case that there is a MoodP in the clause as well, and that the trigger of movement to the initial position in the clause may be more general than $[uT]$. Since this does not affect our discussion, and there are a variety of ways that this could work, we set it aside in the remainder of the paper.

¹⁶ Note that we use CP to indicate a head in the left periphery that is endowed with a $[iFocus]$ feature. It is not intended to be a direct correlate of the FocP proposed in work in the cartographic tradition. In our sense then, FocP can then be read as a CP that is headed by a C that carries $[iFocus]$: $C_{[iFoc]}$. For this paper, it is important that we do not assume a universally expanded CP-layer along the lines that is proposed in such works (Rizzi 1997).

- (30) Búá máá kà ñ dá.
 goat DEF FOC 1SG buy.PERF
 'I bought THE GOAT.'



Certain properties follow from this derivation. Firstly, since we are dealing with a movement derivation, we do not expect that syntactic islands will be able to be escaped from here. Furthermore, since we are dealing with a derivation whereby the element is moved into the left periphery, we expect that the base position is filled by a trace (or deleted copy) of the moved element. This has the effect that there is a gap in the base position of the object. Again, ignoring local subject movement for the time being, we propose that this is the strategy that is employed in non-subject movement, accounting for the fact that we do not observe these elements either escaping islands or being associated with a resumptive pronoun.

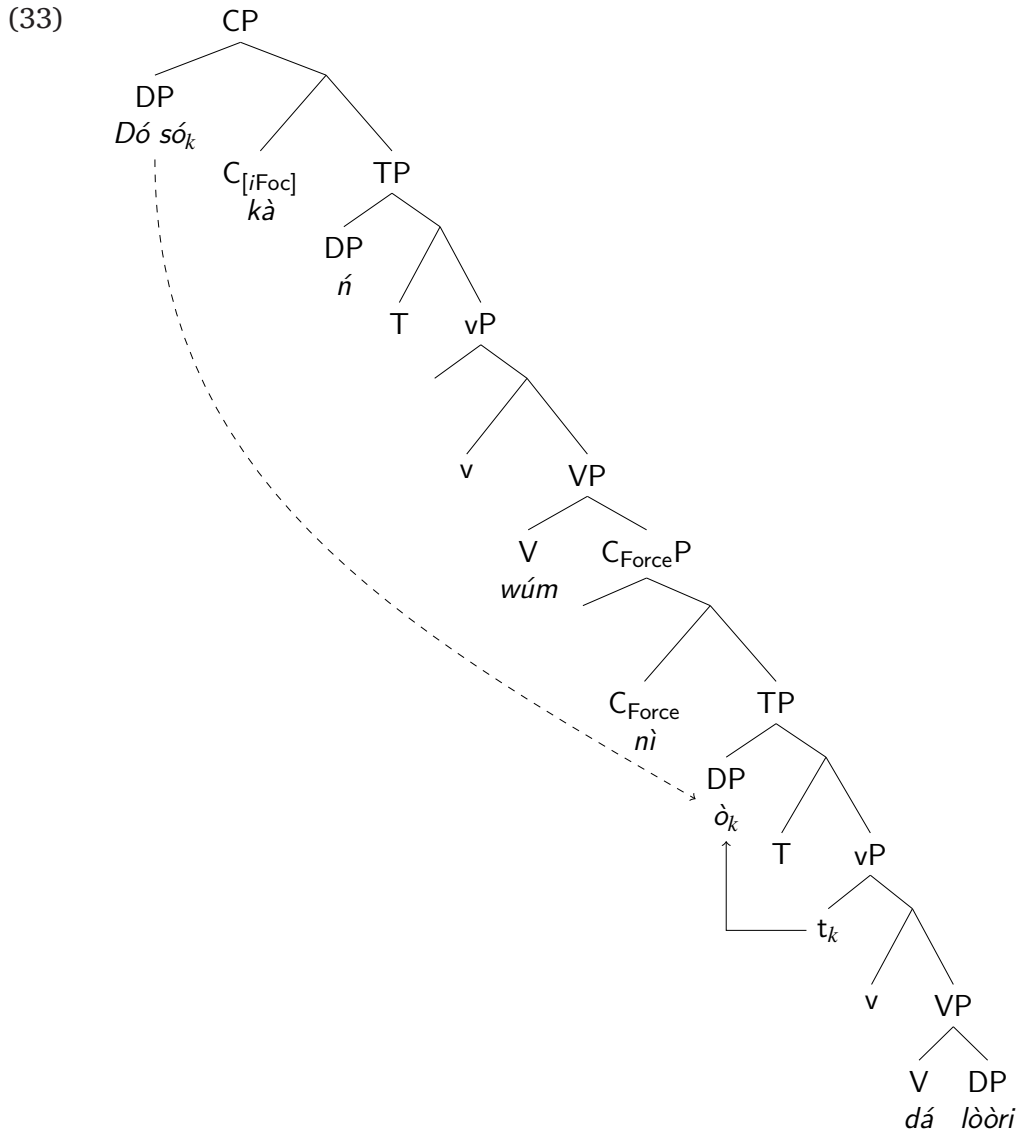
4.2 Base generation and resumption

The second strategy that Dagbani resorts to with *ex-situ* focus, we propose, is a strategy of prolepsis, whereby the focussed element is base generated where it appears in the left-periphery, and is associated with another element elsewhere in the structure. This is what is found with non-local subject movement, which the reader should recall is the only configuration that allows for a resumptive pronoun. Recall that these sentences superficially look very similar to those that are derived through the strategy outlined in the previous subsection, in that there is a focussed element in the left periphery, to the left of *ka*. Since *ka*, by assumption, is the realisation of $C_{[iFoc]}$, then we must assume that in this derivation as well, the focussed element lies in Spec,CP. However, the superficial difference between non-locally moved subjects and non-subjects is that there is a resumptive pronoun in the subject position of the lower clause, whilst there is no corresponding resumptive with non-subject focus.

What we propose then, for this derivation, is that the element that occupies the specifier of Spec,CP is base generated directly there, and it becomes associated with a resumptive pronoun that acts as the subject of the lower clause. We assume that this is a relation of binding (following McCloskey 1990), and not one of movement where the resumptive is the spell-out of a lower copy. Furthermore, we assume that the pronoun in the embedded clause obeys the movements that we would standardly expect. Thus, we are left with the following derivation, where we indicate movement relations with a solid arrow, and

binding relations with a dashed arrow. The pronoun, which is generated as the specifier of vP, raises to Spec,TP to fill the EPP requirement on T. In the matrix clause, the focussed item is generated directly in Spec,CP, where it is associated with the resumptive pronoun in the lower clause so that the interpretations match. For the example in (24) (repeated below), we can give the derivation in (33).¹⁷

- (32) Dó só kà ní wúm nì ò dá lòrì.
 [man certain]_i FOC 1SG hear.PERF that 3SG buy.PERF car
 ‘I heard that A (CERTAIN) MAN bought the car.’



In this case, there is no movement relation connecting the element in the left periphery and the pronoun, and we thus expect that the connection between the two can “violate” syntactic islands, as we have observed is the case for non-local subject focus. This is of course an illusion of sorts: there is no island violation because there is no element moving out of an island. Note that the resumptive is obligatory in this derivation. We know

¹⁷ The label $C_{Force}P$ is intended to reflect that this is the equivalent of the cartographic ForceP. Since we are eschewing traditional cartographic labels in this article largely to avoid confusion, we use this label, but note that the label itself is ultimately irrelevant.

from the examples above that ungrammaticality results if the resumptive is omitted from contexts of non-local subject focus. This is expected in this derivation: the resumptive is obligatory because it is required so that it can satisfy the EPP on the lower T, and receive the thematic information assigned to the lower subject. The element that lies in Spec,CP receives its interpretative properties, such as thematic role *etc.* through its association with the resumptive.

4.3 Why use resumption?

A question that arises now, is why should this second strategy exist? Using resumption in place of moving a subject is perhaps not all that surprising, and could arguably be the result of a Criterial Freezing effect in the sense of Rizzi & Shlonsky (2007), whereby certain positions, once occupied, freeze the occupants in place. Subjects are well-discussed to be potential candidates for such a position.

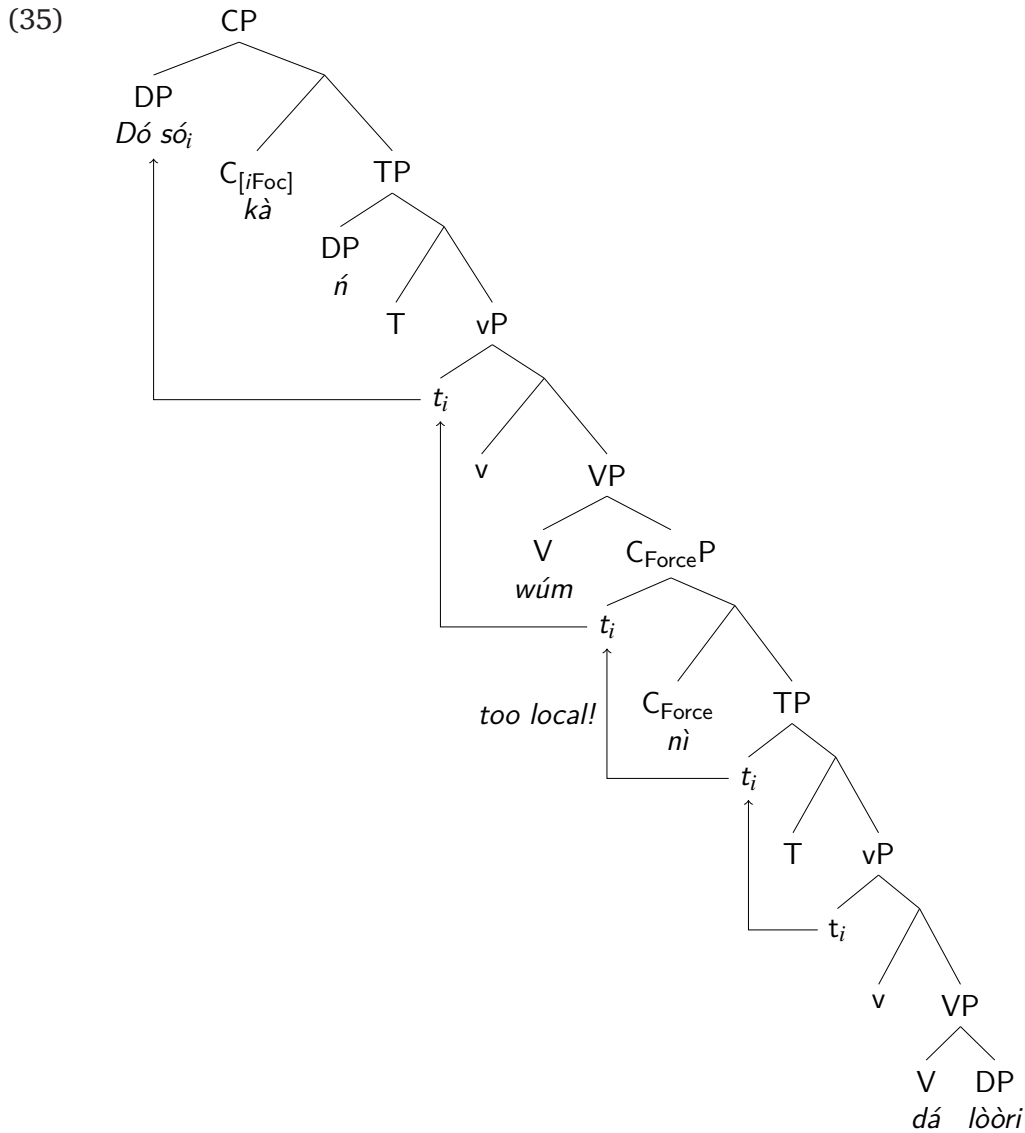
Why such criterial effects should hold remains unexplained, and so a more promising alternative to us seems to be a spate of recent research which has attempted to account for the immobility of subjects through a specific formulation of *antilocality*. These works have looked at phenomena such as Agent Focus in Kaqchikel (Erlewine 2016), *that*-trace and anti-*that*-trace effects in English (Douglas 2017) and the subject condition more generally (Bošković 2016). Such approaches have all proposed some variation on the theme of *antilocality*, where movement is too short to be licit. The papers each take as their starting point the following descriptive generalisation proposed by Erlewine (2016):

- (34) Spec-to-Spec Anti-locality
A'-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

Each of the accounts differ from the others in how they propose to derive (34). Our aim here is not to adjudicate between them but rather provide extra support for its status as a descriptive generalisation or some equivalent that prevents movement from Spec,TP to Spec,CP.¹⁸ Both Douglas (2017) and Bošković (2016) suggest that it may be derived through the theory of labeling, a conclusion which we see as reasonable, and renders the subject position special, rather than accepting (34) as an overarching condition on A'-movement.

With this in mind, we can understand why the resumptive pronoun is necessary in non-local subject focus, rather than using the movement derivation that non-subject focus uses. The answer is that the intermediate stage of movement that would need to happen in a movement derivation is too short. The derivation would precede as follows, and shown graphically in (35). Firstly, the embedded subject moves from Spec,vP to Spec,TP to satisfy the EPP. Secondly, in order to move to the matrix clause, it would need to move to Spec,CP in order to escape the phase. Thirdly, it would move to the matrix Spec,vP to escape the lower phase in the matrix clause (assuming multiple specifiers are possible), before finally moving to the matrix Spec,CP. It is the second stage of this derivation that causes the problem, since the movement is too short. Effectively, when an element bears both [*uT*] and [*uFoc*], one of these features is not going to be licensed since a single element cannot move into the right positions to license both of them.

¹⁸ We note that such a condition is at times too restrictive, and potentially forces us into corners we may not necessarily wish to venture into. Douglas (2017) notes that it effectively forces us to give up on the general view of subject movement to Spec,CP in V2 languages, and Bošković (2016) notes that we are forced to assume the split-Infl hypothesis of Pollock (1989), if the same condition were to hold for A-movement, even for languages where there is little evidence that Infl is complex, which may in itself be problematic (Bobaljik & Thráinsson 1998).



Using a proleptic derivation, however, of base generation in the left-periphery and a resumptive pronoun lower down in the structure allows for the best of both worlds: the specifiers of both CP and the embedded Spec,TP are able to be filled by different elements, with nothing compelled to move between the two. Prolepsis, and splitting the features across two elements that are interpreted as the same (through A'-binding) thus allows for a converging derivation where the subject is interpreted as in focus.

The resumptive pronoun strategy then arises as a way of being able to ensure that both the EPP on T, and the Focus feature in the left-periphery can be licensed. Due to antilocality, both cannot be carried out by a subject with a movement derivation, since the subject cannot make the movement from Spec,TP to Spec,CP.

4.4 Can the resumptive be the spell-out of a trace?

Before ending this section, we are now in a position where we can consider whether our prolepsis analysis of resumption in Dagbani is correct, by considering it in light of an alternative analysis of how resumption is formed. It has become clear that some resumptive pronouns can at times be the spell-out of a movement step, see amongst others Engdahl (1985); Boeckx (2003); Kandybowicz (2007); Sichel (2014); van Urk (2018). That is, whereas movements usually leave behind a gap, occasionally a pronoun can be inserted

in place of said gap, if the position of the gap requires overt pronunciation (Landau 2006; van Urk 2018). It may be possible to recast the EPP requirement of Dagbani as a phonological requirement, such that all else being equal, it needs to be pronounced (see Salzmann et al. 2013 on the idea of the EPP being phonological in nature).

Dagbani, as we have seen, shows resumptive pronouns when a subject has moved non-locally, effectively singling out the embedded subject position. As a reviewer points out, this is similar in some extent to Swedish (Engdahl 1985: 8), where resumptives are used for just the subject position:

- (36) Vilket ord_i visste ingen hur det_i stavas?
 which word knew no one how it is-spelled
 ‘Which word did no one know how it is spelled?’

The use of resumptives for subjects only is a fairly common pattern across the languages of west Africa, and for further discussion to the issues discussed here, we refer the reader to Issah & Smith (in prep). It is then worthwhile questioning whether the same explanation that holds for Swedish can underpin Dagbani.

Engdahl proposes that resumptive pronouns in Swedish are phonetically realised *wh*-variables: that is, they are effectively the spell-out of a trace of movement. In contrast to a language like English, where a subject extraction from the position immediately after a complementiser is ungrammatical, movement from such a position is allowed in Swedish. Engdahl’s explanation is that the subject position is properly governed by C in Swedish. Furthermore, the language idiosyncratically requires that a trace in Spec,TP be realised phonetically (cf. Engdahl’s discussion of Norwegian, which is argued to have the same government of the embedded subject position, but phonetically empty variables there).

A reviewer points out, such an approach would circumvent the need for an antilocality explanation. Much as we appreciate the desire to find a common analysis for Dagbani and languages like Swedish, it is not the case that Dagbani can be seen as parallel to Swedish in this regard. In Dagbani, the use of the resumptive pronoun correlates with an ability to escape islands, but this is not the case in Swedish (Engdahl 1985). We do not see an easy way to handle this fact on the account where the resumptive is the spell-out of a trace, which is a notable drawback of movement-based theories of resumption (Salzmann 2017; 2018).

5 Matrix subjects: Why two focus heads?

We are now in a position where we can consider locally moved subjects. We repeat the distribution of properties in Table 2, to see how the properties of locally moved subjects compare to non-subjects and non-locally moved subjects. Looking at the table, the obvious answer as to which strategy is used by locally moved subjects is that they use a movement strategy. Recall from the discussion of this strategy in section 4.1, the hallmark of this strategy is that there is no resumptive pronoun in the base position, rather a gap, and that syntactic islands cannot be violated. At first glance, this appears to be the case here, given that there is no resumptive pronoun, and that islands cannot be escaped from.

Table 2: Interim Summary.

	Marker	Resumption?	Dependency across islands?	Strategy
Local subjects	n/m/ŋ	×	×	?
Non-local subjects	ka	✓	✓	Resumption
non-subjects	ka	×	×	Movement

However, the reader should recall that we argued in section 4.3.1 that the best possible option for subjects is that they use a resumption strategy, since this allows both Spec,TP and Spec,CP to be filled. The first question to be answered is why local subjects do not make use of resumption. Following that, we have to explain why local subjects use a different focus marker when compared to other foci in Dagbani.

There is a well documented restriction on resumptive pronouns, such that in many cases resumptive pronouns are not able to be used to refer to the subject that most closely c-commands them, a condition identified for Irish by McCloskey (1979) and termed the *Highest Subject Restriction* (HSR). This is not a restriction on resumptives being used for subjects, but only they cannot be used in the closest subject position to the resumptive, as can be seen in the comparison of (37-a) and (37-b) below. Resumption and movement are generally in free variation in Irish, however, there are a couple of exceptions to this. The first is where the A'-dependency would cross an island boundary: in this case, only resumption can be used. The second, and the relevant one for us, is when the A'-dependency targets the highest subject. In this case only movement can be used.

(37) *Irish*, McCloskey (1990: 210)

- a. *An fear a raibh sé breoite.
 them man C be.PST he ill
 'The man that (he) was ill.'
- b. An t-ór seo at chried corr-dhuine go raibh sé ann.
 this gold C believed a few people C was it there
 'This gold that a few people believed (it) was there.'

McCloskey (1990) proposes that the reason why resumptives are illicit in this position is because the antecedent and resumptive enter into a A'-binding relation, but one that cannot be too close. That is, it is an A'-equivalent of a Principle B effect, and that resumptives must be sufficiently far away from their binder.¹⁹

(38) A pronoun must be A'-free in the least complete functional complex containing the pronoun and a subject distinct from the pronoun.

With this in mind, the lack of resumption in Dagbani for local subjects is brought into relief: the resumption strategy cannot be used because even though it is the best in terms of allowing both Spec,TP and Spec,CP to be filled for non-local subjects, for local subjects these two positions are too close and they violate (38). That is, there is no subject which separates the resumptive pronoun and its binder, and the pronoun is not A'-free. The same tension in *ex-situ* focus arises for matrix subjects as was identified for embedded subjects above: that they are asked to fulfill EPP requirements in both CP and TP. However, given that they cannot employ a resumptive pronoun to fill Spec,TP without violating (38), the conflict seems unresolvable.

5.1 A movement analysis of local subject focus

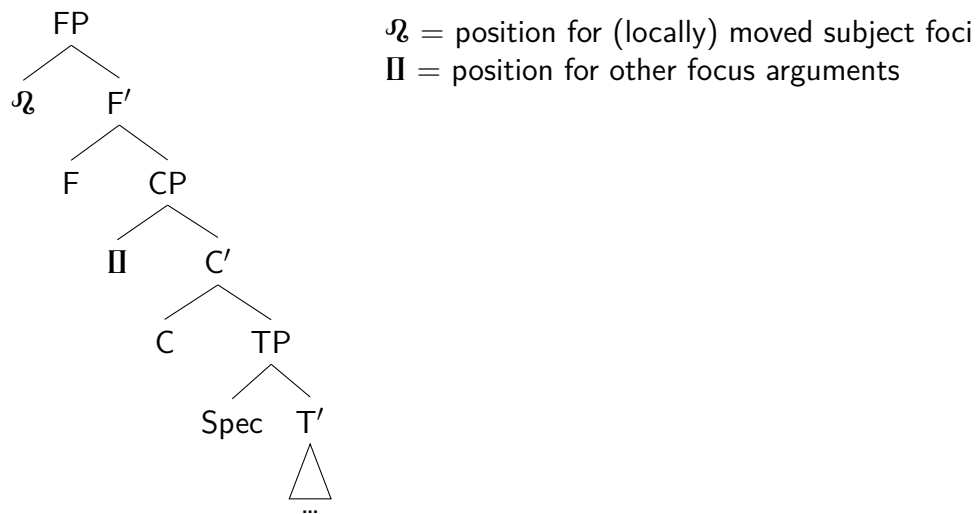
Given that movement to Spec,CP is also not an option due to antilocality, we propose that Dagbani has been forced to innovate and has developed additional structure (for now, FP), with a higher projection above the one headed by *ka*.²⁰ If *n* fills the head posi-

¹⁹ There are disagreements over exactly what underlies the HSR, see Salzmann (2018) for some concerns over McCloskey's proposal.

²⁰ This innovation is partly forced by the functional requirement, identified by Fiedler et al. (2010), that focussed subjects must be marked. This functional requirement will rule out a language that leaves locally focussed subjects obligatorily *in-situ*.

tion of this higher FP, then we arrive at the following structure, which we will revise immediately below.

(39) *to be revised below*



In this structure, the specifier of the higher FP is sufficiently far enough away from Spec,TP such that movement is now possible without violating Spec-to-Spec antilocality. There is a projection between Spec,TP and Spec,FP, namely CP, which is crossed with movement from Spec,TP, and antilocality is not violated. It should be further noted that fairly standard assumptions of economy, such as “shortest move” will restrict this position to matrix subjects. Since all other foci can move to Spec,CP, then they will do so. Local subjects, which are independently not allowed to do so because of antilocality, are only able to move to Spec,FP, and so that is where they move to. We propose that this is roughly the structure that arises for locally moved subjects. FP is generated only when necessary, and is forced to in the case of local subject foci, due to (i) the necessity of the subject to move to the left periphery to license its [*uFocus*] feature; (ii) a prolepsis derivation being unavailable due to the HSR; and (iii) antilocality preventing movement to Spec,CP. In the next subsection, we proceed to refine the structure further, to account for a couple of outstanding issues.

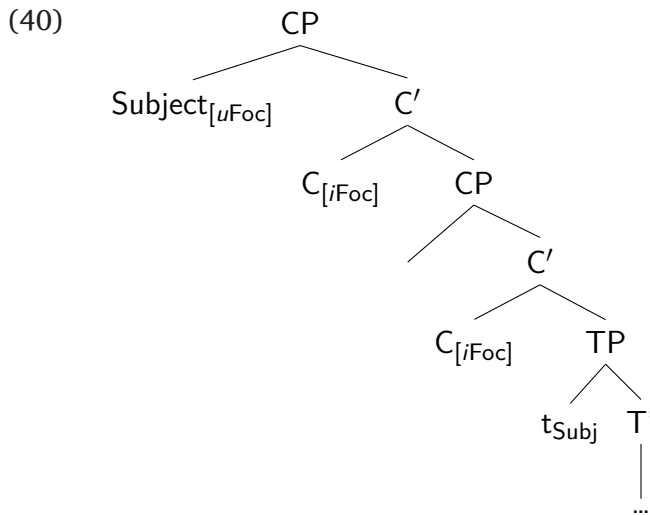
5.2 The difference between *n* and *ka*

Whilst (39) suffices to allow for movement of local subjects to the left-periphery, it is not quite sufficient for our purposes. Whilst the additional structure gives us the result we need, in order for the account to be insightful, we need to consider the composition of the head labelled F, as two pressing questions arise.

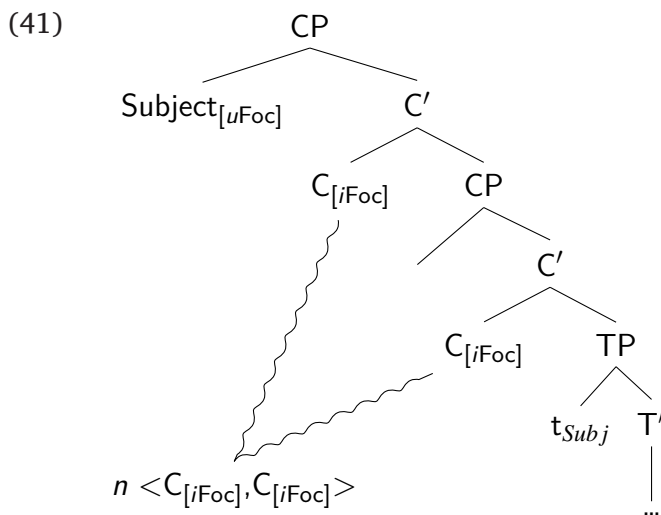
Firstly, positing a generic functional head F is not sufficient, and runs the risk of being a *deus ex machina* without further motivation. The subject moves to the left periphery in order to license its [*uFoc*] feature, and so in order for this to be successful, then F must carry [*iFoc*]. We could propose that Dagbani simply generates an extra phrase that carries focus above the CP that it already has. There would in essence be two focus phrases in the clause. However, despite this simplicity, Rizzi (1997) has argued that there is maximally one focus head per clause, which is in obvious conflict with a proposal where Dagbani generates another focus phrase on top of CP.²¹

²¹ Our thanks to an anonymous reviewer, Carlo Cecchetto and Johannes Mursell for all (independently of each other) pointing this out to us.

We then propose that the CP is copied to an immediately dominating projection. That is, when the structure is being built, at the point that CP is inserted it is obvious to the derivation that it can no longer converge: C[iFoc] is too close to the element that bears [uFoc]. In order to save this, C[iFoc] is merged once more, which results in the following structure. Crucially, as will become clear in the discussion immediately below, this is not a case of head movement, and so the features on the lower copy are retained in addition to the higher ones. The subject can then move to the specifier of the higher CP, crossing the lower one and not violating antilocality.²²



This structure has the result that we can analyse why there are the two focus markers *n* and *ka*. We propose that *n* represents the spell-out of both Cs, either fused together as is often assumed in Distributed Morphology (Halle & Marantz 1993), or we have a case of a span spelling out two heads (Svenonius 2012; Merchant 2015; also Abels & Muriungi 2008), as in (41).²³ The rules in (42), are then part of the Dagbani lexicon.



²² An anonymous reviewer points out that for this analysis to work, it must be the case that there can be no other projection between TP and CP, otherwise antilocality would present no problem for local subject movement. However, as stated before, there is no reason to think that there is another projection here, given that we are not aware of anything that can intervene between Tense/Mood and the focus marker.

²³ We represent the portmanteau as Spanning rules merely for convenience, being easier to represent visually, and do not wish to imply that this is preferable to a fusion based analysis. We see no issue with fusion creating a complex head of C and C and the following rules applying. Both approaches seem reasonable, and we have nothing to favour either over the other.

- (42) a. $n \Leftrightarrow \langle C_{[iFoc]}, C_{[iFoc]} \rangle$
 b. $ka \Leftrightarrow \langle C_{[iFoc]} \rangle$

Gereon Müller (p.c.) questions how, given that the two C-heads are featurally identical, the two rules in (42) could be distinguished for the purposes of Vocabulary Insertion (VI). We assume that VI is sensitive to the complexity of certain features, and as such, it can tell the difference between one instance of a feature and two instances of the same feature. There is some evidence that VI is sensitive to such things, particularly within the realm of case. Smith et al. (2015; 2019) argue that case features are internally complex and recursive, and that VI can distinguish between [K], which is the unmarked case of a language, say, nominative, and [KK], which would be the dependent case, say, accusative.²⁴

In light of this structure, one naturally wonders whether multiple foci are possible in Dagbani, and whether they give evidence for the two positions. However, multiple *ex-situ* foci are not possible in the same clause in Dagbani, and do not let us test the position of a focussed subject relative to a focussed object. Yet, the ban on multiple focus is interesting in the context of our proposed structure, and is worth some further discussion. In general, if two elements are in focus, one of the elements will move to the left-periphery and the other will stay *in-situ*. Furthermore, in environments where we would expect multiple *wh*-questions, only one of the elements is a *wh*-word, and the other is an indefinite.

- (43) a. *Yà kà ɲùní cháŋ?
 where FOC who go.PERF
intended: ‘Where has who gone?’
 b. Yà kà só cháŋ?
 where FOC someone go.PERF
 ‘Where has someone gone?’

We can see both of these as being the result of a general prohibition on multiple foci in Dagbani. Multiple foci are possible, as long as they appear in different clauses as in (44). Therefore, the ban on multiple foci seems to hold only per clause, as can be seen in the following, where both the matrix clauses and embedded clauses contain a question word, and are grammatical.

- (44) a. ɲùní ní yèlí nì ɲùní ní kàná.
 who FOC say.PERF that who FOC came.PERF
 ‘Who said that who came.’
 b. ɲuŋi n yeli ni bo ka Abu du?
 who FOC say.PERF that what FOC Abu climb.PERF
 ‘Who said what Abu climbed?’

The obvious explanation for the ban on multiple *ex-situ* foci in a single clause is that there can be maximally one specifier of the CP. However, given that we have a shell-CP, with an intermediate position where there can be a specifier, one might expect then that an *ex-situ* object could occupy the lower specifier position. This does not happen, and deserves a little comment here. It is important to note though that we are not proposing that the

²⁴ Another option is that there is a difference between the two focus projections that goes beyond structural position, presumably reflective of a difference in semantics (cf. Abels & Muriungi 2008), with the result that there is a tangible difference between the heads which could be identified by some feature. However, for Dagbani, it is difficult to pin down what this semantic difference would be based on the evidence available to us.

higher CP is a second focus projection *per sé*. As a reviewer points out, Rizzi (1997) has suggested that there is maximally one focus projection per clause, though there is disagreement over this (Kiss 1998). Here, we are not proposing that there are multiple focus heads that bring in their own focus semantics. Rather, the expanded CP should be seen as a single instance of focus that is divided across multiple heads in the structure: that is, the higher $C_{[iFoc]}$ is an extension of an existing one.²⁵ Thus, descriptively, we can say that the ban on multiple foci in the same clause comes from it being the case that $[iFoc]$ can only be associated with one argument at a time.

In fact, there is some evidence that it is indeed the case that the two instances of $C_{[iFoc]}$ work as a unit, and cannot each independently license a focus. For some speakers (2 out of 4 speakers consulted, including the first author of this paper), it is possible to have the following sentence, where both the embedded subject and embedded object are in focus, with the object moving to the matrix clause and the subject locally moving to the embedded left periphery:²⁶

- (45) %Búá kà Napari yèlí nì Abu ñ dá.
 goat FOC Napari say.PERF that Abu FOC buy.PERF
 ‘Napari said that ABU bought a GOAT.’

Suppose that the two instances of $[iFoc]$ in the embedded CP could independently license focus on different arguments, then under the assumptions here we would expect that the focussed object would move to the specifier of the lower CP, and no further, given that the trigger of movement — the need to value its unvalued $[uFoc]$ feature — would be satisfied at that point. However, the embedded object does move higher, to the matrix left periphery. We propose that this happens because the two instances of $[iFoc]$ in the embedded left periphery are the same feature (that is, the feature is shared across multiple heads in the tree, see Pesetsky & Torrego 2007; Abels 2012) and as such, whatever one of the instances is related to, the other is as well. As a collective, they then value the $[uFoc]$ of the subject, but they cannot independently license different $[uFoc]$ features. Since (the two instances of) $[iFoc]$ can only be associated with one argument at

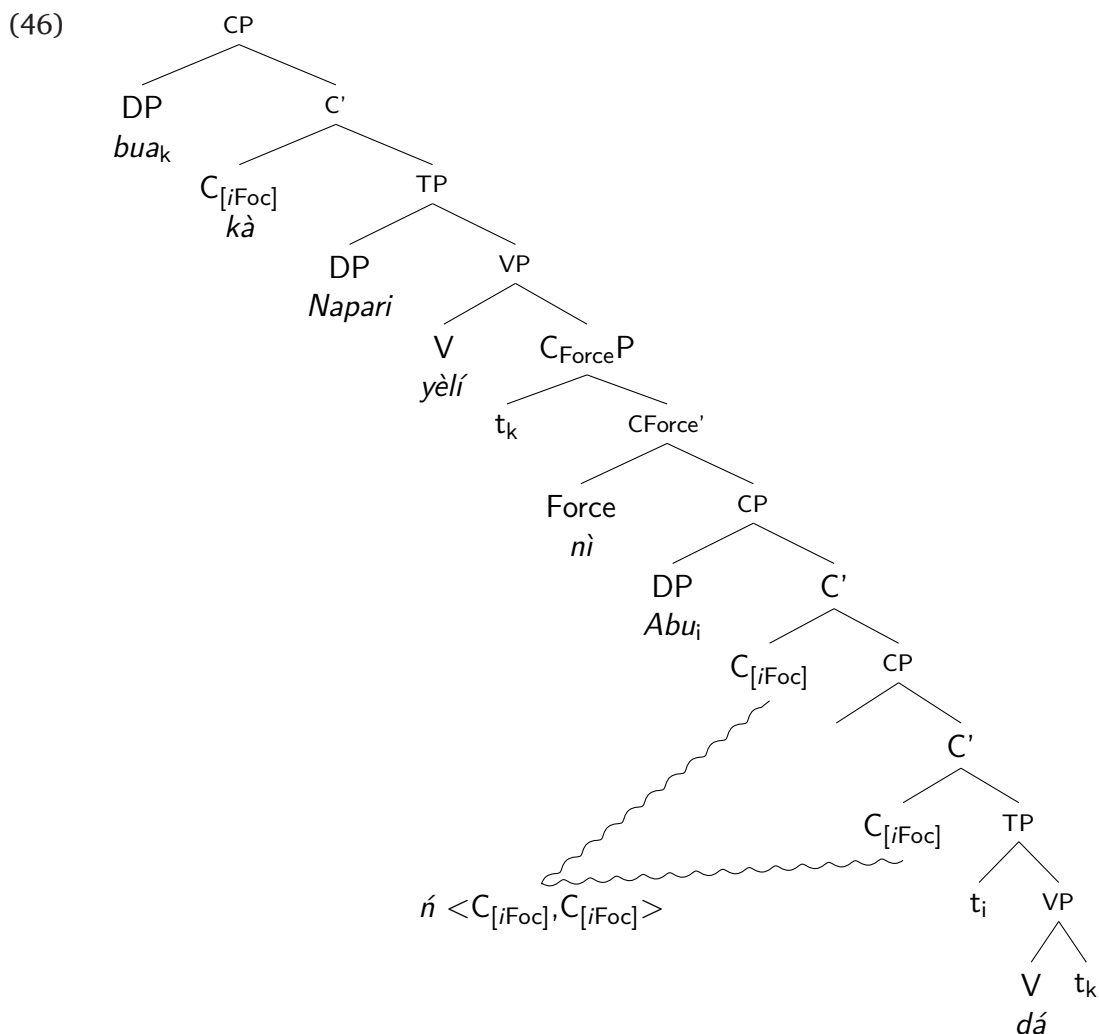
²⁵ Of course the maximal projection of the lower $C_{[iFoc]}$ must be able to count as a phrasal projection in order to allow movement to be non-anti-local. That is, once the second instance of $C_{[iFoc]}$ is merged, it cannot count as a structural extension of the first, but rather, a phrasal projection in its own right so that the subject can cross this phrasal boundary without causing any problem. Put in Douglas’s terms (see also Erlewine 2016: fn. 13), it must be the case that the higher $C_{[iFoc]}$ has merged with the lower $C_{[iFoc]}$ as its complement, rather than treating TP as its complement, as the lower one does. This does not affect its interpretive status. Thanks to an anonymous reviewer for pushing us to clarify this.

²⁶ The opposite, where the embedded object moves to the embedded left-periphery, and the embedded subject appears in the matrix left-periphery is also fine:

- (i) Napari_i kà Abu yèlí nì búá kà ò_i dá.
 Napari FOC Abu say.PERF that goat FOC 3SG buy.PERF
 ‘Abu said that NAPARI bought A GOAT.’

On the face of it, this is surprising. It looks as though there should be enough structure such that the embedded subject can move through the specifier of the head that head that hosts *nì* — which we will call later on $C_{Force}P$, see footnote 27 — in order to get into the higher clause, leaving a non-expanded CP in the lower clause. The presence of the resumptive is then surprising. However, we assume that such a derivation is ruled out through minimality considerations (Rizzi 1990; 2000): if two elements are competing for the same position, the element that moves the shortest wins. Since the subject is only moving from Spec,TP, and the object comes from VP, then the subject will always be the closer argument and expansion of the CP will have to happen whenever a local subject bears $[uFoc]$. Recall from above, though, that the resumptive pronoun does not bear $[uFoc]$, and so does not compete for movement to Spec,CP with the focussed object in this example. Therefore, in (i), there is no competition and the object is free to move to Spec,CP.

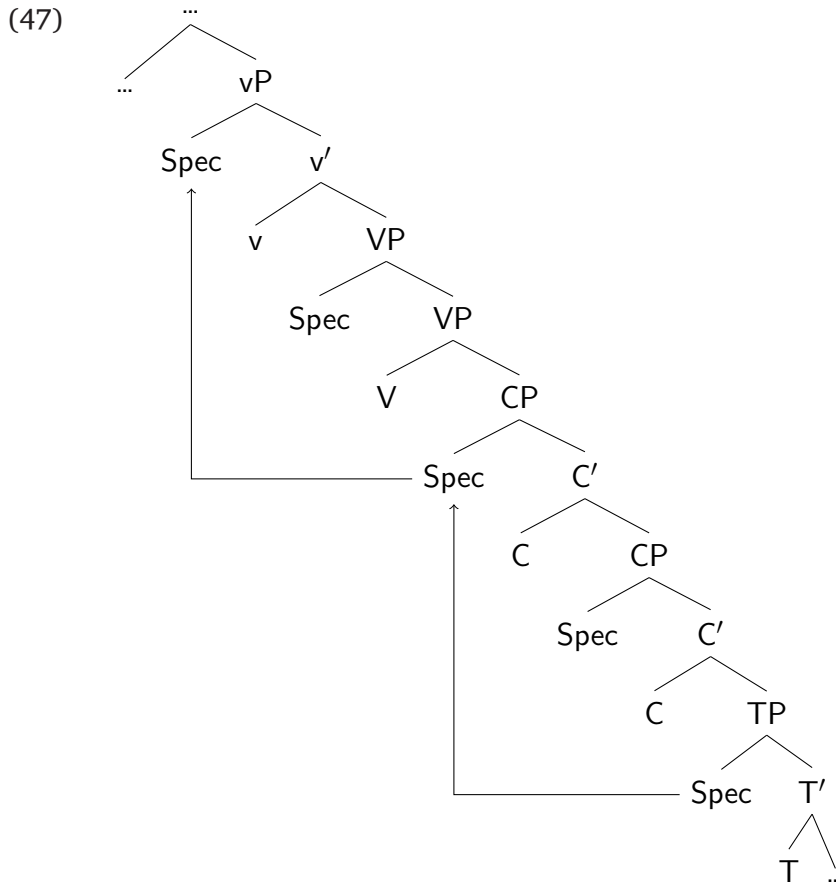
a time, then the specifier position of the lower CP layer will not be a place where the embedded object can move to and value and license its [*uFoc*]. Thus, in (45), the embedded subject moves to the specifier of the embedded CP, where its [*uFoc*] is valued and licensed by the [*iFoc*] that is shared across the two CP heads. This [*iFoc*] feature cannot then license any other foci. This means that the embedded object must move into the matrix left periphery, in order to find a $C_{[iFoc]}$ that is unassociated with any other focussed argument. We assume that the embedded object moves through the specifier of the projection hosting *nì*, which we take to be the CP head that is the equivalent to the cartographic ForceP, labelled as C_{ForceP} .²⁷ The derivation is given below, with irrelevant projections removed:



As a final point before leaving this discussion, a reviewer questions why the expansion of CP does not apply in embedded clauses, allowing embedded subjects to move to the matrix clause without having to make use of the resumptive pronoun.²⁸ That is, what is there to stop the following:

²⁷ The label is irrelevant, however, we avoid using ForceP as we have avoided the traditional cartographic labels throughout the rest of the paper.

²⁸ Recall that *n* is possible in embedded clauses, signalling that the expanded FocP is not a root clause phenomenon, see (25) above. However, when a focus appears with *n* in the embedded clause, it cannot move further into the matrix clause.



If such a derivation would exist, then we would expect an embedded subject to move into the matrix left periphery, but not leave a resumptive pronoun in the lower clause. Given that we do not find such sentences, then we can be confident that the derivation does not exist. However, the question is why. The best speculation that we can give to this is that copying the C head is a marked option (potentially instructive as to why Dagbani type languages with two focus markers appear to be quite uncommon). The copying of CP happens only as a last resort option, when nothing else will let the derivation converge. The option of using prolepsis for subjects in embedded clauses could mean that there is nothing to force the iteration of the embedded CP. That is, it is in some sense more economical to use prolepsis than making the complex CP that is needed to allow an embedded subject to extract. One could handle this in terms of OT-style ranked constraints, broadly along the lines of Salzmann (2013). Unfortunately, due to space restrictions we cannot explore this any further here. However, we refer the reader to Issah & Smith (in prep) where we discuss constraint violations of these types in further detail across a larger sample of west African languages.

6 Alternative analyses

Our analysis regarding the difference between *n* and *ka* treats the two focus markers as allomorphs of one another, with the difference being structural — *n* has a more complex structure than *ka*. As the reviewers of this paper point out, there is no direct evidence from Dagbani that this is the case, but we have used theory internal reasoning to reach this conclusion. Whilst not in and of itself a problem, it would be much stronger if we could present empirical evidence for this. There are two obvious ways where one might seek such direct evidence for our proposal to identify a possible structural complexity of C. Firstly, one could attempt to find a landmark above the lower $C_{[IFoc]}$ but below the higher one, and show

that focussed subjects lie above that. We do not know of any adverbs that would delimit these two projections, but nor would we expect to find one: it would be an extraordinarily difficult pattern to learn given that multiple foci do not cooccur in the left periphery. The second option would be that the subject focus marker would be bimorphemic, and contain the morpheme that is found for non-locally moved subject foci. Effectively, it would be nice if *n* overtly contained *ka*. Obviously, it does not, nor are we aware of any language that does show multiple focus markers in the way that Dagbani does offer evidence (see the examples given above in section 3.1 above), but it stands as an open prediction of our account that we would expect to find them. It is thus not possible for us to present the desired independent evidence.

We understand and share these concerns, and agree that our account would be stronger if we could offer independent evidence. Though we are able to present only theory-internal motivation for the expanded structure of C, we maintain that this account has the strength of tying together multiple aspects of the syntax of Dagbani *ex-situ* focus constructions in a way that others do not. Furthermore, whilst there are a range of other possible accounts that could be pursued, as we discuss below, we believe that our account fares better than these other potential analyses, which each face a number of problems. Below we discuss three potential alternatives suggested to us for the treatment of *n*: (i) where C and T are bundled into a complex head; (ii) where *n* is a marker of *in-situ* foci; and (iii) where *n* is a C head that can also license nominative case.

6.1 C-T Bundling

The C-T bundling approach proposes that C and T together form a complex head, which following convention in the cited works we call CT. The idea in brief is as follows: since subjects seem to have difficulty moving from Spec,TP to Spec,CP (whether this is due to antilocality or some other constraint is orthogonal to the current point), then a language can bundle the heads C and T onto the same node, and this head can fulfill the requirements of both the C and the T with the same argument in the same position, namely in its specifier. Such a head will be responsible for the EPP, as well as information structural related movements in the language. We first illustrate this in more detail, before discussing why we do not believe that it is applicable to Dagbani.

6.1.1 Bundling in Defaka

We illustrate the idea of bundling heads together with data from Defaka (Bennet, Akinlabi & Connell 2012). There is an important clarification to be made below regarding the position of subjects, but given that the phenomena that Bennet, Akinlabi & Connell attempt to account for with bundling is basically the same, it allows for ease of exposition. Defaka is an Ijoid language spoken in Nigeria. Like Dagbani, it has two (relevant) focus markers, whose use is determined according to the position where the focalised element has come from. Local subject movement results in *kò*, whereas other elements use *ndò*, as exemplified below.²⁹

- (48) *Defaka*, Bennet, Akinlabi & Connell (2012: 1)
- a. I Bòmá ésé-kà-rè.
I Boma see-FUT-NEG
'I will not see Boma.' (neutral)

²⁹ Defaka differs from Dagbani in that non-local subject movement results in the insertion of the clitic *kè* on the verb. Bennet, Akinlabi & Connell (2012) take this to be a marker of A'-movement from within the vP phase. Such a marker of A'-movement is not displayed in Dagbani to the best of our knowledge, and so we ignore this aspect of Defaka.

- b. I kò Bòmá ésé-kà-rè.
I FOC Boma see-FUT-NEG
'I will not see Boma.' (subject focus)
- c. Bòmá ndò i ésé-kà-rè-kè.
Boma FOC I see-FUT-NEG-KE
'I will not see Boma.' (object focus)

Defaka has in common with Dagbani that embedded subjects can use either focus marker, depending on where the final position of the focussed element is; if the focus element lies to the left of the matrix clause, then *ndò* is used, however if the embedded subject moves only as far as the left periphery of the embedded clause, then *kò* is used, hence the characterisation as local subject movement vs. other.

Bennet, Akinlabi & Connell (2012) propose to account for this pattern in the following way. Taking a cartographic approach, they propose that in the higher regions of the clause, the functional sequence is (universally) as follows:

- (49) Force > Topic* > Focus > Topic* > Fin > Subj > {Tense, Asp, Mood} > (vP)

'Subj' is the head that is responsible for licensing subjects, and Bennet, Akinlabi & Connell (2012) assume without discussion that this then is the head that licenses nominative case. This is a point that we return to below, but Bennet, Akinlabi & Connell assume that the subject lies in a higher position than Spec,TP, since they assume that vP moves to the specifier of TP in Defaka, with supporting evidence from Ijo (Carstens 2002). In case the subject is in focus, then it has both a nominative case feature to be licensed, and a focus feature that must be licensed. Bennet, Akinlabi & Connell assume that the language allows both Subj^0 and Foc^0 to be bundled into a single head when they both license features on the same argument, in this case the subject. When an object is in focus, however, Foc^0 licenses the focus feature on the object, but Subj^0 still licenses nominative case on the object. Since the two heads are licensing two different arguments, they cannot be bundled into one and realised by a single morpheme.

- (50) a. $[_{\{\text{Foc-Subj}\}} \text{DP}_i [\{\text{Foc-Subj}\}^0 [_{\text{TP}} \dots t_i \dots$ Subject Focus
 b. $[_{\text{FocP}} \text{DP}_i [\text{Foc}^0 \dots [_{\text{SubjP}} \text{DP} [\text{Subj}^0 [_{\text{TP}} \dots t_i \dots$ Object Focus

What is then needed is the following morphological rules, which will ensure that Foc-Subj is realised differently to Foc:

- (51) a. $\text{Foc-Subj} \Leftrightarrow kò$
 b. $\text{Foc} \Leftrightarrow ndò$
 c. $\text{Subj} \Leftrightarrow \emptyset$

6.1.2 *n* is not CT in Dagbani

Though a bundling hypothesis provides an elegant solution to Defaka as described above, we believe that it is not appropriate to apply this to Dagbani. Firstly, we should make clear that we take the licenser of subjects in Dagbani to be T^0 , and not Subj^0 , as assumed by Bennet, Akinlabi & Connell (2012). Even if there does exist some SubjP in the functional sequence, we err on the side of caution as to whether we should assume that all languages would make use of it. That is, we do not follow the cartographic tradition of assuming that all projections are universally always there, but rather that heads are projected when made available in the grammar of a particular language, and also when needed by a par-

ticular derivation.³⁰ Thus, we assume that SubjP (or an equivalent position above Spec,TP, but lower than the CP layer), is not active in the grammar of Dagbani. It is of course impossible to prove the non-existence of something, however, to our knowledge, there is no reason to suspect that SubjP is projected in Dagbani.

With this in mind, we consider the bundling approach that is exemplified by Martinović (2015) and Erlewine (2018), where it is C and T that are bundled together, to be the relevant approach to contrast ours with. In this approach, following Chomsky (2008), the probes that are on T originally begin life on C, but are transferred to T during the course of the derivation. In effect, the functional information of T is bundled with that of C at an early stage. This allows in principle the splitting apart of C and T probes to not take place, and C and T can remain bundled in a single head, called CT, which carries out the duties of both C and T. In the relevant sense here, CT would be able to license both the EPP feature, traditionally on T, and the focus feature, traditionally on C, as a single head.

Though we have no objection to this analysis for the phenomena that Martinović and Erlewine discuss, the clearest piece of evidence against this analysis is that if *n* were CT, then we do not expect T and *n* to cooccur on separate morphemes as on the CT approach they will be realised by the same head. Tense marking in Dagbani is realised by the use of preverbal particles. These particles express different points in time, including various distinctions in the past, present, habitual and future.

Now, if *n* were the realisation of a CT bundle, then we would expect that *n* and tense marking could not cooccur. However, this is not the case, as can be seen in (52-a). In that respect it behaves exactly as *ka*, suggesting they are both equally focus markers.

- (52) a. Abu ní sà dá lòòri.
 ABU FOC PST.YESTERDAY buy.PERF car
 ‘Abu bought a car yesterday.’
- b. Napari míní Mbangba kà tí sà pùhí.
 Napari and Mbangba FOC 1PL PST.YESTERDAY greet
 ‘We greeted NAPARI and Mbangba yesterday.’

T and *n* are realised by different heads, and as such, *n* is not a bundle of C/Foc and T. It should also be noted that the same facts are reported for Gurene and Kusaal data reported in section 3.1 (see in particular (10) and (11)).³¹

One may question whether these markers are really realisations of T heads, rather than adverbials. Were they adverbials, then it could be that T and C are bundled, irrespective of the presence of the tense markers, which would not instantiate T. However, Hartmann & Issah (2018) argue conclusively that these markers are not adverbials, but rather show the properties one would expect of heads. Firstly, tense marking can cooccur with adverbials that also reflect tense. There is, however, an asymmetry between the two in that the use

³⁰ Note that we do not take exception to the existence of another projection hosting subjects other than T in other languages: such “split” Ts have been well documented in various languages (Pollock 1989; Bobaljik & Jonas 1996; McCloskey 1996b), however, we believe that it is something that varies from language to language as to whether there is a split or a simple Infl (Bobaljik & Thráinsson 1998).

³¹ The realisation of Mood is unaffected by focus, indicating that we are not dealing with a C-Mood bundle either:

- (i) a. Abu yì bó-r-í nímdì bé kù tí ò lí.
 Abu COND wantIMP-CJ meat 3PL NEG give 3SG it
 ‘If Abu wants meat, they won’t give him.’ (lit: If Abu wants, eat, they won’t give it to it).
- b. Abu ní yì bó-r-í nímdì bé kù tí ò lí.
 Abu FOC COND wantIMP-CJ meat 3PL NEG give 3SG it
 ‘If ABU wants meat, they won’t give him.’ (lit: If Abu wants meat they won’t give it to it.)

of an adverbial necessarily leads to the appropriate tense marker, yet this relationship is unidirectional, in that the use of a tense marker does not necessitate the appearance of an adverbial. Furthermore, tense markers are obligatory, and the intended meaning cannot be expressed without it, whereas the tense adverbials are optional.

- (53) a. *Ábú sà bú bíhí máa.*
 Abu PAST beat.PERF children DEF
 ‘Abu beat the children yesterday.’
 b. **Ábú bú bíhí máa sòhíla.*
 Abu beat.PERF children DEF yesterday

A further difference between tense markers and adverbials is that the tense markers are preverbal, whereas adverbials are post-verbal in Dagbani.

6.2 *n* as a marker of *in-situ* focus

Another possibility suggesting to us by Michael Yoshitaka Erlewine (p.c.) is that *n* is not a head in the left periphery at all, but rather is a marker of foci that are *in-situ*. Recall that we have proposed throughout this paper that *n* is a variant of the C head that encodes focus, essentially *n* and *ka* are allomorphs (see section 6.3). However, it is very hard to diagnose this, given that subjects are usually left-most in the sentence to begin with, and movement to the left-periphery is string vacuous. This leaves open the possibility that subjects simply remain *in-situ*, and look as though they have been moved to the left-periphery. An option then, would be to analyse *n* as a marker of arguments that are in focus, but also *in-situ*.

It is clear however, that this is not its function. It is easy to show that *in-situ* focus is allowed for any element that is not a subject in Dagbani. We showed this above in (16), repeated below.

- (54) a. *Bò kà ò dú?*
 what FOC 3SG climb.PERF
 ‘What has s/he climbed?’
 b. *Ò dú lá kúyú.*
 3SG climb.PERF FOC stool
 ‘S/he has climbed a stool.’

(54-b) is a congruent answer to the question in (54-a). As shown, it is not obligatory to mark the object with *n*. The marker *lá* can — but need not — appear, but crucially *n* can never appear. What the data show then, is that elements that are clearly *in-situ* foci — clearly shown given their lack of movement to the left-periphery — are not marked by *n*.

This does not of course prove that *subjects* are not in focus. *n* could then be a marker of *in-situ* subject foci. However, the mechanics of getting such an approach to work are tricky. One possibility for this is that the head of the projection which hosts the subject is canonically null, but is realised as *n* when the subject is in focus. Recall from the previous subsection that given the independence of *n* and tense, then the projection cannot be assumed to be T. Thus, we would need to assume some projection specific to the subject, such as SubjP Rizzi & Shlonsky (2007); Bennet, Akinlabi & Connell (2012). However, there is no evidence that we can find, direct or indirect, that can point us towards the existence of a SubjP. Furthermore, *n* and *ka* are in complementary distribution, and serve by and large the same functions, and it seems simpler to us to assume that *n*, along with

ka is the realisation of a focus head in the left-periphery. It should be stressed that if one were inclined, it is possible to analyse *n* as the realisation of Subj when a DP carrying a focus interpretation occupies its specifier. We have stated that there is no reason to believe that this is the case, but it is difficult to prove the non-existence of SubjP, and an associated sensitivity of Subj to focus. The point is that this is at best no less stipulative than our analysis, and raises important questions about how much information regarding grammatical roles is needed to be visible to the syntax.

6.3 *n* as an exceptional licenser of nominative case

If we are right, and it is the case that both *n* and *ka* are both C heads, then they are allomorphs of one another. As we have discussed above, we believe that this conclusion is correct, that *n* represents the realisation of C, albeit more structurally complex than *ka*. However, if both *n* and *ka* are C-heads, it is not the only way that this could be the case.

Another option, also suggested to us by Michael Yoshitaka Erlewine and an anonymous reviewer, is that *n* and *ka* are realisations of the same head, but they are not structurally different. Rather, the difference between the two is that *n* is a C head that is exceptionally able to assign nominative case. There is no complex C head in the case of *n*, but due to the ability to *n* to license nominative case, the subject can bypass Spec,TP and move there directly. The use of *n* in this sense can still be seen as an option of last resort in the sense that it would be only used when necessary, i.e. when it is needed to license nominative case, and that in doing so, nominatives are freed from the need to land in Spec,TP. Were we to assume that nominative is (a) necessary for subjects; and (b) only able to be assigned in Spec,TP — both assumptions that have been explored extensively in the history of the field — then any subject that skips Spec,TP will not receive nominative case. Suppose then that antilocality remains, and prevents movement between Spec,TP and Spec,CP, then a subject that is in focus can as a last resort move directly to Spec,CP to satisfy a focus requirement, yet still be case licensed through the use of *n*, which assigns nominative (indicated by subscript NOM in (55)) as well as performing its usual information structure duties.

(55) $[_{CP} \text{ Abu } [_{C'} n_{NOM} [_{TP} \emptyset [_{T'} T \text{ da loori}]]]$

Since *n* is used only where necessary, then other foci (objects, adjuncts and non-local subjects) would use *ka*, and nominative would be assigned by T in the normal way (as above, the assigner of nominative case is indicated by NOM).

(56) $[_{CP} \text{ Loori } [_{C'} ka [_{TP} \text{ Abu } [_{T'} T_{NOM} \text{ da}]]]$

Though this approach works from a technical perspective we feel like there are two principal problems that lead us to believe that it is not the right approach. First is the notion that *n* is a last-resort assigner of nominative case to the subject. As in many languages of the region, morphological case is only a peripheral phenomenon in Dagbani. Lexical nouns do not show case alternations, and so case is only seen in (a subset of) the pronouns. Yet, despite there being a set of pronouns for nominative case, these are never found when a pronoun is a focus. Rather, the emphatic pronouns must be used, which do not show any case alternations.

(57) a. Abu nyá bá.
 Abu see.PERF 3.PL.ACC
 'Abu saw them.'

- b. Bɛ́ nyá Abu.
3.PL.NOM see.PERF Abu.
'They saw Abu.'
- c. Bánà ní nyá Abu.
3.PL.EMPH FOC see.PERF Abu
'THEY saw Abu.'

This is not a surprising result: it is not uncommon for languages to require a strong form of a pronoun in a position where said pronoun is prominent (Cardinaletti & Starke 1999). However it does cast considerable doubt on the claim that *n* is a licenser of nominative case, given that the nominative specific pronouns are disallowed from appearing with it. Thus, there is no evidence to support this account.

A further problem is with the assumption that *n* would allow the subject to bypass Spec,TP. Given the assumption that the subject can in principle avoid moving to Spec,TP when focussed, we would expect that this should be available also for embedded subjects. For instance, the embedded subject should be able to move directly from Spec,vP in the embedded clause to the embedded Spec,CP, and then onto the matrix left-periphery.³² Since it can be licensed with nominative case in the final landing site by *n*, there is no reason for it to stop in the lower Spec,TP. Yet, there is evidence that this derivation is not available given that a resumptive pronoun must be used in a non-local Spec,TP. There is clearly something that ensures that the subject, or something linked to it, moves to Spec,TP and it is not possible to avoid this.

6.4 Summary

In this section we have explored three alternatives to our treatment of the focus marker *n*. We have seen that there is empirical evidence against the first two of these, namely that *n* would be a bundle of C and T, or that *n* is a marker of *in-situ* focus. We have also not been able to find evidence in favour of the latter approach whereby *n* allows the subject to bypass Spec,TP by licensing nominative case on the subject, and that there is suggestive evidence against it. Furthermore, even on the last approach, which we are unable to conclusively discount, other aspects of *ex-situ* focus constructions remain and independent mechanisms must be additionally posited.

7 Conclusions

Our aim in this paper was to present and analyse the fairly intricate system of *ex-situ* focus in Dagbani, and explore how the facts can be accounted for. As mentioned at the outset, one has to offer an explanation for how Dagbani makes a three-way distinction of *ex-situ* focus properties, caused by the inconsistent behaviour of subjects which behave differently according to whether they are focussed locally or non-locally. Local subject focus and non-subject focus share the fact that they cannot escape syntactic islands, in contrast to non-local subject focus. Yet, non-local subject focus and non-subjects share the fact that the element in the left-periphery occurs with the focus marker *ka*, whereas local subject focus results in *n*. Finally, local subjects and non-subjects do not use resumptive pronouns, but non-local subjects do. We have argued that these properties are interlinked, and all arise from subjects needing to move to Spec,TP and Spec,CP, which is well known to pose challenges in many languages. Dagbani is in no way unique in facing challenges with subject extraction, however, the manner in which Dagbani resolves the known challenges results in a somewhat unique system of *ex-situ* focus in the language.

³² Note that this is not to claim that *n* should show up in the left periphery of each clause passed through, but rather the point is that if the subject can skip Spec,TP, then it should be possible to do this for every clause.

Underlying the differing behaviour of subjects in Dagbani are considerations of antilocality, which prevents a subject from moving to Spec,CP after having visited Spec,TP. Whilst some languages resolve this issue by having the subject avoid Spec,TP altogether (or by some other way), Dagbani makes use of a prolepsis derivation in the case of non-local subject movement. This prolepsis derivation is however otherwise unavailable to subjects moving locally due to the Highest Subject Restriction.³³ The unavailability of prolepsis has led to Dagbani (and by hypothesis the other languages that have developed two focus markers in the same way, see section 3.1) developing a strategy for allowing subjects to move locally, and still be able visit Spec,TP and the specifier of CP. We argued that Dagbani forms a complex CP layer, by copying the features on C to a projection immediately above, in effect forming a layered CP.

As ever, a number of interesting issues were raised along the way that we were unable to discuss due to space limitations. One is the formulation of antilocality itself. We have discussed a version following Erlewine (2016) and Douglas (2017) where (A'-)movement from Spec,TP is unable to proceed unless the moved element crosses a phrase other than TP. As noted in the introduction, there are various formulations of antilocality, and little agreement amongst them over what should count as too short, other than the proposal that there is some conception that movement cannot be too short. As noted at the outset, one can have various reservations about this formulation (see section 1 and footnote 18), amongst them its formulation only in terms of A'-movement. However, our analysis of Dagbani does not seem immediately compatible with the characterisation of antilocality given in either Grohmann (2003) or Bošković (2005). To the extent that our characterisation of these phenomena in Dagbani has been correct then, we have lent further support for the characterisation of antilocality in Erlewine (2016); Douglas (2017).

At a descriptive level, our paper offers an improvement on previous descriptions and analyses of Dagbani where the choice between *n* and *ka* is conditioned by either being a subject or a non-subject. Given the variable behaviour of subjects outlined above, then such a characterisation is not tenable, and we have shown that it is better described as the difference between local subject focus, non-local subject focus and non-subject focus.

Abbreviations

ACC = accusative, C = complementiser, CJ = conjoint, COND = conditional, COP = copular, DEF = definite, DJ = disjoint, EMPH = emphatic, EVI = evidential, F = feminine, FOC = focus, IMPERF = imperfective, LOC = locative, PART = participle, PERF = perfective, PST = past, PL = plural, PROG = progressive, PRT = particle, Q = question particle, SG = singular, WH = question particle

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³³ And, for non-subjects a general preference for movement over prolepsis (handled by a transderivational constraint of the sort offered in Salzmann 2013).

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Competing Interests

The authors have no competing interests to declare.

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