

Two components of long-distance extraction: Successive cyclicity in Dinka^{*†}

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Abstract

This paper presents novel data from the Nilo-Saharan language Dinka, a language in which the syntax of successive-cyclic movement is remarkably transparent. We show that Dinka provides strong support for the view that long-distance extraction proceeds through the edge of every verb phrase and every clause on the path of movement (Chomsky 1986, 2000, 2001, 2008). In addition to this, long-distance dependencies in Dinka offer evidence that extraction from a CP requires agreement between v and the CP that is extracted from (Rackowski and Richards 2005; Den Dikken 2009a, 2012a,b). The claim that both of these components constrain long-distance movement is an important one, as much work on extraction has argued that one of these requirements can subsume the other. To accommodate it, we propose a modification of Rackowski and Richards (2005), in which both intermediate movement and Agree relations between phase heads are necessary steps in establishing a long-distance dependency.

Keywords: successive cyclicity - long-distance dependencies - phase theory - intermediate movement - Dinka

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†This paper uses a mix of Dinka orthography and IPA. We mainly use Dinka spelling, but also mark tone (high = á, low = à, falling = â). Voice is marked by diacritics below the vowel (modal = a, breathy = ̤, creaky = ̰). In addition to this, we use the following abbreviations: 1/2/3 = 1st/2nd/3rd person, ACC = accusative, ANG = *ang* morpheme, ASP = aspectual marker, AUX = auxiliary, C = complementizer, CS = case marker, DTR = ditransitive, F = feminine, GEN = genitive case, FUT = future, INF = infinitive, IMPF = imperfective, LOC = locative case, M = masculine, NEG = negation, NOM = nominative, NS = non-subject voice, OBL = oblique voice, PERF = perfective, PL = plural, PRES = present tense, PRF = perfect, PROG = progressive, SG = singular, TR = transitive.

1 Introduction

The idea that long-distance dependencies involve successive-cyclic movement through the edges of CP and v P/VP goes back to Chomsky (1986) and is one of the core assumptions of phase theory (Chomsky 2000, 2001, 2008). In this paper, we show that the Nilo-Saharan language Dinka provides remarkably strong and straightforward evidence for this claim. Dinka's phase edge positions, Spec-CP and Spec- v P, have the EPP property, so that, ordinarily, they must be occupied by some XP. Because these positions are also edge positions, long-distance movement can satisfy these EPP requirements on the way, allowing us to trace the path of movement straightforwardly. This pattern then provides evidence for the claim that long-distance dependencies involve a sequence of movement steps of the extracted XP from edge to edge, as assumed in phase theory.

Dinka also provides insight into the limitations of successive-cyclic movement, however. We will show that, in cases of long-distance extraction through Spec- v P, it is *not* actually the *wh*-phrase that satisfies the EPP property of v , but rather the finite CP from which the *wh*-phrase is extracted. In particular, we will argue that, in Dinka, a CP from which extraction takes place must move to Spec- v P and subsequently extrapose, mimicking the effects of long-distance movement. In this way, Dinka offers evidence that, in order to attract an XP from an embedded CP, v must stand in an *syntactic* relation with that CP. This conclusion is also reached in recent work on Tagalog, Hungarian, and Zulu (Rackowski and Richards 2005; Den Dikken 2009aa, 2012a,b; Halpert 2012).

That both of these components constrain successive-cyclic movement is an important conclusion, as many contemporary proposals either completely or partially do away with one of these two processes. A number of authors, for example, have proposed getting rid of Agree or featural triggers as a component in initiating successive-cyclic movement (e.g. Bošković 2002, 2007; Chomsky 2008, 2012). Conversely, Rackowski and Richards (2005)

and Den Dikken (2009, 2012a,b) argue that agreement between v and CP allows v to ignore the CP phase as a locality boundary, thereby doing away with the need for intermediate movement to Spec-CP.

To reconcile these conclusions, we propose a modification of Rackowski and Richards (2005), in which the need to Agree with phases that are extracted from is independent of phase impenetrability. This allows us to preserve the insight behind Rackowski and Richards' proposal without jettisoning the traditional view of successive cyclicity, for which Dinka offers such striking evidence.

The paper is structured as follows. Section 2 introduces the two positions in the Dinka clause that must be occupied by an XP in declaratives, which we identify as Spec-CP and Spec- v P. In section 3, we demonstrate that the EPP property of these positions can be satisfied by *wh*-movement, providing strong evidence for the claim that long-distance dependencies involve intermediate movement steps. Section 4 then documents a restriction on Spec- v P, which we attribute to v 's role as a case assigner, and presents an argument for our approach to Dinka based on how this restriction affects extraction of DPs and PPs. In section 5, we look more closely at long-distance extraction through Spec- v P and argue that it is the finite CP, and not the *wh*-phrase, that satisfies v 's EPP property. We propose that this is an instantiation of the idea that agreement between v and an embedded CP is required to extract from that CP. Section 6 then presents a theory of long-distance extraction, based on Rackowski and Richards (2005), which attempts to reconcile this finding with the notion of phase impenetrability. Finally, section 7 considers the Dinka facts in a cross-linguistic perspective.

2 Two EPP positions in Dinka

Dinka is a Nilo-Saharan language, spoken in South Sudan by the Dinka people, who number at least 3 million. There are many different varieties of Dinka, usually divided up into five distinct dialect groups. This paper presents data from Dinka Nyarweng, which is part of the southeastern Bor dialect group. No detailed syntactic work has been done on any Dinka Bor dialect, though we draw on work by Torben Andersen on the syntax of the Agar dialect (1991, 2002, 2007, 2012) and a short grammar (Nebel 1948) that describes some of the properties of the Rek dialect.

Most Dinka words are monosyllabic and most grammatical distinctions are made by means of tone, vowel length or vowel quality (see, for example, Andersen 1987, 1993; Malou 1988; Remijsen and Gilley 2008). Dinka is a V2 language with a fairly rigid word order (Andersen 1991). Two aspects of Dinka word order will be particularly important to us. There are two positions, which we identify as Spec-CP and Spec-*v*P, which must be occupied if possible. We will start by outlining the properties of these two positions in declarative clauses.

2.1 *Spec-CP as an EPP position*

Let us first introduce the properties of the position we will take to be Spec-CP in Dinka. We will show that, in finite clauses, this is an EPP position, in that it must be occupied by some XP. We then present several arguments for the claim that the position in question is Spec-CP.

As previously mentioned, Dinka is a V2 language (Andersen 1991). In a declarative clause, the highest verb or auxiliary raises to C and must be preceded by one and only one XP.¹ As in other V2 languages, different types of XPs can appear in Spec-CP. In the

¹There are systematic exceptions to this with adjuncts, which may precede Spec-CP, creating a V3 structure. This contrasts with other V2 languages, like Dutch and German, in which this is not possible. We will

examples in (1a–c), Spec-CP hosts a subject, an object, and a locative, respectively. (We have boxed the XP that appears in the Spec-CP position. We will box both Spec-CP and Spec-*v*P throughout, as this will make it easy to show how these positions interact with extraction.)

(1) *Matrix clauses are V2:*

- a. Càn a-bí Bòl ỳ̀c aléth r̀̀ok.
 Can 3SG-FUT Bol buy.DTR clothes town.LOC
 ‘Can will buy Bol clothes at the town.’
- b. Aléth aa-bí Càn ké ỳ̀c Bòl r̀̀ok.
 clothes 3PL-FUT.NS Can.GEN PL buy.DTR Bol town.LOC
 ‘Can will buy Bol clothes at the town.’
- c. R̀̀k a-bí Càn aléth ỳ̀c Bòl.
 town 3SG-FUT.NS Can.GEN clothes buy.DTR Bol
 ‘Can will buy Bol clothes at the town.’

Note that the choice of which XP sits in Spec-CP has a few syntactic (and semantic) consequences (Andersen 1991). The XP in Spec-CP agrees with a declarative particle for φ -features (a process we will shortly discuss in more detail). In addition, the XP that occupies Spec-CP occurs in the unmarked case form.² In these examples, this contrasts with what we will refer to as the genitive case form, which is reserved for non-initial subjects and possessors (Andersen 1991), and the locative case, in which postverbal locatives appear. We will not need to be too concerned with this case and agreement system here, but see Van Urk (in prep.) for extensive discussion and a proposal for how these case alternations

not try to account for this variation here.

²We call this the unmarked case because it is the citation form and because it is the most general in its distribution. On morphological grounds, it is hard to determine which case form is the least marked, as they are mostly distinguished by differences in tone and vowel quality.

come about that is fully compatible with our claims here.³

Dinka is V2 in all finite embedded clauses as well. In an embedded declarative, for example, the highest verb or auxiliary is again in second position and has to be preceded by an XP from the same range of phrases (2a–c).⁴

(2) *Embedded clauses are V2:*

- a. A-cíi Majók yòk [ké Càn] bí Bòl ỳ̀c aléth
 3SG-PRF.NS Majok.GEN find.out C Can FUT Bol buy.DTR clothes
 r̀̀ok].
 town.LOC
 ‘Majok found out that Can will buy Bol clothes at the town.’
- b. A-cíi Majók yòk [ké aléth] bíi Càn ké ỳ̀c
 3SG-PRF.NS Majok.GEN find.out C clothes FUT.NS Can.GEN PL buy.DTR
 Bòl r̀̀ok].
 Bol town.LOC
 ‘Majok found out that Can will buy Bol clothes at the town.’
- c. A-cíi Majók yòk [ké r̀̀ok] bínné Càn aléth
 3SG-PRF.NS Majok.GEN find.out C town FUT.OBL Can.GEN clothes
 ỳ̀c Bòl thín].
 buy.DTR Bol in.it
 ‘Majok found out that Can will buy Bol clothes in the town.’

³In short, Van Urk argues that Dinka only allows ϕ -agreement with XPs in the unmarked case. As a result, movement to Spec-CP, because it is accompanied by agreement, requires the *undoing* of previous instances of case assignment. Van Urk proposes that this is achieved in two ways: for locatives, by incorporation of P into the verb, and, for subjects, by a bleeding interaction with a phase-level case assignment rule. Both of these processes lead to the appearance of a case alternation.

⁴These examples illustrate another interesting property of Spec-CP. As evident in (2a–c), a verb-initial order is exceptionally possible in the matrix clause if a complement clause is present. This is discussed at length in section 5, where we will propose that this happens because complement CPs may move to Spec-CP and extrapose.

As in other V2 languages, Spec-CP is generally not allowed to be empty. In a matrix clause, the only grammatical interpretation that is possible if the verb is initial is that of a *yes-no* question (3a). In an embedded clause, ungrammaticality results (3b).

(3) *Spec-CP cannot be empty:*

- a. * cí Bòl kurá cák.
 PRF Bol.GEN bowl make
 ‘Bol made a bowl.’
 (OK as *yes-no* question: ‘Did Bol make a bowl?’)
- b. *A-yé Bòl tàak, [cí Áyèn kitàp yòoc].
 3SG-IMPF Bol.GEN think PRF Ayen.GEN book buy.TR
 ‘Bol thinks that Ayen bought a book.’

It is not immediately obvious that this position should be Spec-CP, particularly given the fact that embedded clauses are V2 also. In addition, embedded V2 may co-occur with overt complementizers, as in (2a–c) and (4a–b).

(4) *Complementizers co-occur with V2:*

- a. A-cá tàak, [ke Càn bí wít tiám].
 3SG-PRF.1SG think C Can FUT wrestling win.TR
 ‘I think that Can will win the wrestling.’
- b. A-cá luéel, [ye Càn a-bí wít tiám].
 3SG-PRF.1SG say C Can 3SG-FUT wrestling win.TR
 ‘I said that Can will win the wrestling.’

However, there are a number of good reasons to think that this EPP position is nonetheless in the (extended) left periphery, a couple of which we will now discuss. A first piece of evidence that V2 is C-level in Dinka comes from the fact that V2 is restricted to finite

clauses, which are also the clauses that can contain a complementizer. Non-finite clauses are uniformly verb-initial (5a–b).

(5) *Non-finite clauses are verb-initial:*

- a. Bòl a-cí Ayén l̩ɲ [bí Adít j̩àl].
 Bol 3SG-PRF Ayen encourage.TR FUT Adit.GEN leave
 ‘(lit.) Bol encouraged Ayen for Adit to leave.’
- b. *Bòl a-cí Ayén l̩ɲ [Adít bí j̩àl].
 Bol 3SG-PRF Ayen encourage.TR Adit FUT leave
 ‘(lit.) Bol encouraged Ayen for Adit to leave.’

These clauses cannot be headed by complementizers, but do contain tense material, the future auxiliary *bi*. If V2 is established above T, it follows that V2 should be absent in these clauses. Non-finite clauses simply lack an active C layer.

That V2 is linked to the left periphery is also suggested by the fact that some complementizer *do* in fact interfere with embedded V2. The interrogative complementizers *men* (‘whether’) and *na* (‘if’) block V2, so that only the verb-initial order is grammatical (6a–b). In addition to this, the declarative complementizer *ye* allows V2 not to be satisfied (6c).

(6) *No embedded V2 with some complementizers:*

- a. Majók a-gài [mèn/ná cí D̩ɲ l̩ b̩ai].
 Majok 3SG-wonder whether/if PRF Deng.GEN go home
 ‘Majok wonders whether Deng went home.’
- b. *Majók a-gài [mèn/ná D̩ɲ (a-)cí l̩ b̩ai].
 Majok 3SG-wonder whether/if Deng 3SG-PRF go home
 ‘Majok wonders if Deng went home.’

- c. A-cá luéel, [ye bí Càn wít tiám].
 3SG-PRF.1SG say C FUT Can.GEN wrestling win.TR
 ‘I said that Can will win the wrestling.’

Another reason for thinking that V2 is established in the C domain in Dinka comes from the fact that the V2 position hosts agreement that is sensitive to clause type. In particular, 3rd person XPs that occur in first position trigger the appearance of the agreement prefix *a(a)-* on the highest verb or auxiliary (7a–b).

(7) *3rd person XPs in first position trigger agreement:*

- a. yèn cí mîir tíŋ.
 I PRF giraffe see
 ‘I saw a giraffe.’
- b. Bòl a-cí wèu kwàl.
 Bol 3SG-PRF money steal
 ‘Bol stole some money.’

This agreement disappears in questions, however. When a *wh*-phrase moves to Spec-CP, the agreement prefix is absent (8a–b).

(8) *First position agreement disappears under wh-fronting:*

- a. Yeŋó cí Bòl tíŋ?
 what PRF.NS Bol.GEN see
 ‘What did Bol see?’
- b. yèn cí gài [yeŋó cí Bòl tíŋ].
 I PRF wonder what PRF.NS Bol.GEN see
 ‘I wonder what Bol saw.’

This agreement also goes missing in questions in which there is no *wh*-word before the

verb, such as in situ questions or *yes-no* questions (9a–b).⁵

(9) *First position agreement is absent in questions without wh-fronting:*⁶

a. ηór cí ηó̃ kuèen?

Ngor PRF what read

‘What did Ngor read?’

b. Cí Bôl kurá cák?

PRF Bol.GEN bowl make

‘Did Bol make a bowl?’

We can explain these facts by saying that the first position is a specifier of a C head. We can then say that there are two kinds of C heads, a declarative one with unvalued φ -features and an interrogative one that lacks these features. In contrast, if the first position is lower, say Spec-TP, we have no reason to expect agreement with it to be sensitive to clause type.⁷

A final argument for the claim that the first position is Spec-CP is the fact that it is the landing site for *wh*-movement. When *wh*-words are merged with the focus particle *ye-*, they obligatorily front to first position, to form matrix and embedded questions (10a–b).⁸

⁵The facts are actually slightly more complicated here, in that the disappearance of first position agreement is optional in in situ questions. The point still stands, however, as this optionality is never found in declaratives.

⁶In situ questions productively alternate with *wh*-questions and are fine even in out-of-the-blue contexts (see Cable 2012 for similar facts in Dholuo, a language in the same family). The fronting *wh*-words are formed by adding the particle *ye* to them.

⁷The picture is actually not quite this simple. Topic agreement also disappears in CPs headed by the complementizer *ke* and CPs that have been extracted from. It is still clear, however, that the distribution of this agreement is conditioned by properties of the C domain.

⁸The particle *ye-* appears to derive from the inverted form of the copula, from a cleft construction. Note, however, that *wh*-questions with the *ye-* particle are not synchronically clefts. Clefts have a different syntax. They make use of an overt pronoun that sits in Spec-CP of the embedded clause and agrees with the declarative particle, as (ia–b) illustrate.

(i) *Clefts require overt pronoun and topic agreement:*

- a. é Bôl [yèen a-cí l̀ Boston].
3SG.COP Bol 3SG 3SG-PRF go Boston
‘It is Bol that went to Boston.’

(10) *Wh-phrases target Spec-CP:*

- a. $\text{y}\grave{\text{e}}\text{n } \text{c}\acute{\text{i}} \text{ g}\grave{\text{a}}\text{i} \quad [\text{ye}\eta\acute{\text{o}} \text{c}\acute{\text{i}} \quad \text{B}\acute{\text{o}}\text{l} \quad \text{t}\acute{\text{i}}\eta].$
 I PRF wonder what PRF.NS Bol.GEN see
 ‘I wonder what Bol saw.’
- b. $\text{Ye}\eta\acute{\text{o}} \text{c}\acute{\text{i}} \quad \eta\acute{\text{o}}\text{r} \quad \text{ku}\grave{\text{e}}\text{en}?$
 what PRF.NS Ngor.GEN read
 ‘What did Ngor read?’

We conclude then that the first position is a specifier of the C domain and that V2 is established at the C level in Dinka. To capture the fact that complementizers co-exist with V2, we propose an extended left periphery (Rizzi 1997), with at least two C heads, of which the lower one triggers V2 and acts as a phase head (as we will shortly show).⁹ Note that, for the rest of the paper, we abstract away from this more complex picture and continue to describe the first position just as Spec-CP.

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- b. $*\acute{\text{e}} \quad \text{B}\acute{\text{o}}\text{l} \text{c}\acute{\text{i}} \quad \text{l}\grave{\text{o}} \text{Boston}.$
 3SG.COP Bol PRF go Boston
 ‘It is Bol that went to Boston.’

In addition to this, questions with *ye-* do not have the semantics of clefts. In particular, such questions do not induce a uniqueness presupposition, so that ‘mention-some’ questions are felicitous. For example, the question-answer pair in (iia–b) does not imply that only sweet potatoes are tasty with meat.

(ii) *No uniqueness presupposition with ye-:*

- a. $\text{Ye-}\eta\acute{\text{o}} \quad \text{m}\acute{\text{i}}\text{t} \quad \text{kene} \text{r}\acute{\text{i}}\eta?$
 FOC-what tasty with meat
 ‘What is tasty with meat?’
- b. $\text{B}\grave{\text{a}}\text{m}\acute{\text{b}}\acute{\text{e}} \quad \text{a-m}\acute{\text{i}}\text{t} \quad \text{kene} \text{r}\acute{\text{i}}\eta.$
 sweet.potato 3SG-tasty with meat
 ‘Sweet potato is tasty with meat.’

We conclude then that *ye-* is a focus particle associated with *wh*-movement, or a Q particle in the sense of Hagstrom (1998) and Cable (2007, 2010).

⁹Another option is to treat those complementizers that co-occur with V2 as adjoined particles of some sort. This has the advantage of allowing us to capture the difference between these complementizers and the ones that block V2, such as the interrogative ones, which we could then analyze as *true* C heads.

2.2 *Spec-vP as an EPP position*

There is a position in the verbal domain that is similar to Spec-CP, in that it also has the EPP property, creating a V2-like effect in the *vP*. We identify this position as Spec-*vP*. The Spec-*vP* position immediately precedes the Dinka verb cluster (i.e. where verbs sit if they are not the highest verb or auxiliary in the clause) and must be occupied by a nominal object if possible.

For example, in (11a–b), the perfective auxiliary *ci* occupies the V2 position. As a result, the main verb *tɨŋ* (‘see’) does not raise to C. Observe now that the position before the main verb must be occupied by the direct object (11a–b).

(11) *Position before verb cluster must be occupied:*

- a. $\gamma\grave{e}n$ cí mîr tɨŋ.
I PRF giraffe see
‘I saw a giraffe.’
- b. * $\gamma\grave{e}n$ cí tɨŋ mîr.
I PRF see giraffe
‘I saw a giraffe.’

Similarly, in ditransitives, one object must always surface before the verb (12a–b). The other object occurs postverbally. This alternation is free.

(12) *One object is preverbal and one postverbal:*

- a. $\gamma\grave{e}n$ cí Ayén yiġn kitàp.
I PRF Ayen give book
‘I gave Ayen a book.’
- b. $\gamma\grave{e}n$ cí kitàp yiġn Ayén.
I PRF book give Ayen

‘I gave a book to Ayen.’

It is never possible for the Spec-*v*P position to be empty (13a–b).¹⁰

(13) *Position before verb cluster cannot be empty:*

a. * $\gamma\grave{e}n$ cí $y\grave{i}\grave{e}n$ kitàp Ayén.

I PRF give book Ayen

‘I gave Ayen a book.’

b. * $\gamma\grave{e}n$ cí $y\grave{i}\grave{e}n$ Ayén kitàp.

I PRF give Ayen book

‘I gave a book to Ayen.’

There is a key difference between Spec-*v*P and Spec-CP, however, which we will be particularly important later in the paper. Unlike Spec-CP, Spec-*v*P only hosts nominals. In intransitives, for example, PP adjuncts may not occur before the verb (14a–b).

(14) *Adjuncts cannot occupy Spec-*v*P:*

a. Wò cí kèt dòm-íc.

we PRF sing garden-in

‘We sang in the garden.’

b. *Wò cí kèt.

we PRF garden-in sing

‘We sang in the garden.’

We have seen then that there is a position in the verbal domain that also has an EPP property. We will take this to be Spec-*v*P, because it appears to be an object position and because, as we will shortly show, it functions as an edge position, both properties generally ascribed to Spec-*v*P (e.g. Chomsky 1995, 2000, 2001; Wurmbrand 2001).

¹⁰It is also not possible for both objects to occur before the verb.

To sum up briefly, we have seen that Spec-CP and Spec- ν P function as EPP positions in Dinka, in that they must be occupied if possible. We now turn to their behavior in the context of long-distance extraction. We will see that Dinka provides abundant evidence that these positions are used as intermediate landing sites in long-distance extraction.

3 The signature of successive cyclicity

With this much understanding of the structure of the Dinka clause in place, we can turn to the evidence that Dinka offers for the nature of successive-cyclic movement. We will see that \bar{A} -extraction exhibits two kinds of interactions with the positions we identified as Spec-CP and Spec- ν P. First, extraction across Spec-CP and Spec- ν P typically requires them to not be overtly filled. Our hypothesis will be that extraction must take place successive-cyclically, occupying the edge positions on its way up the tree. Second, extraction of plural *wh*-phrases leaves behind a plural clitic *ke* in the specifier of ν P, again suggesting that *wh*-phrases must land in this position. Note that, although we will largely restrict discussion to *wh*-questions, the same facts obtain for other kinds of movement, like topicalization and relativization.

3.1 EPP effects and long-distance extraction

Section 2 demonstrated that the specifiers of CP and ν P must be filled in Dinka whenever possible, a fact that we described as an EPP effect. We will now see that \bar{A} -extraction across these positions makes the EPP effects appear on the surface to be absent, requiring positions to be empty which are typically obligatorily occupied.¹¹ We propose that the EPP requirements are satisfied, in this case, by the \bar{A} -moved phrases themselves, which occupy Spec-CP and Spec- ν P as they move past.

¹¹Part of this observation goes back to Andersen (1991), who noted that local relativization requires Spec-CP to be empty.

We saw previously that, in ditransitives, one object must occupy Spec-*v*P (15a–b).

(15) *One object is preverbal and one postverbal:*

a. ɣèn cí Ayén yiɛ̀n kitàp.

I PRF Ayen give book

‘I gave Ayen a book.’

b. ɣèn cí kitàp yiɛ̀n Ayén.

I PRF book give Ayen

‘I gave a book to Ayen.’

Now observe that, when either object is extracted, it is not possible for the other, non-interrogative object to appear in the Spec-*v*P position (16a–d).

(16) *Object extraction requires empty Spec-*v*P:*

a. Yeŋà cí m̀òc _____ yiɛ̀n kitàp?

who PRF.NS man give book

‘Who did the man give the book to?’

b. *Yeŋà cí m̀òc kitàp yiɛ̀n?

who PRF.NS man book give

‘Who did the man give book to?’

c. Yeŋó cí m̀òc _____ yiɛ̀n Ayén?

what PRF.NS man give Ayen

‘What did the man give Ayen?’

d. *Yeŋó cí m̀òc Ayén yiɛ̀n?

what PRF.NS man Ayen give

‘What did the man give Ayen?’

Extraction must then apparently take place via the specifier of *v*P, leaving it empty. This is

in clear contrast with declaratives, in which leaving Spec-*v*P empty is ungrammatical (see 13a–b).

We see a similar effect with Spec-CP. If an XP is extracted from an embedded clause, the Spec-CP position of that clause may not be filled (17a–d), even though, as we saw in section 1, this is ungrammatical in declaratives (e.g. 3a–b).

(17) *Extraction blocks occupation of Spec-CP:*

- a. Yeṇà cúkkú luéel, [] cíi kitàp yòoc]?
 who PRF.1PL say PRF.NS book buy.TR
 ‘Who did we say bought a book?’
- b. *Yeṇà cúkkú luéel, [] (a-)cíi yòoc]?
 who PRF.1PL say book 3SG-PRF.NS buy.TR
 ‘Who did we say bought a book?’
- c. Yétenô cúkkú luéel, [] cíi wòok kitàp yòoc]?
 where PRF.1PL say PRF.NS we.GEN book buy.TR
 ‘Where did we say that we bought a book?’
- d. *Yétenô cúkkú luéel, [] (a-)cíi wòok yòoc]?
 where PRF.1PL say book 3SG-PRF.NS we.GEN buy.TR
 ‘Where did we say that we bought a book?’

This effect extends to every Spec-CP position on the path of movement. Movement of an XP across multiple clauses causes every Spec-CP along the way to appear empty. For example, when extraction crosses two clause boundaries, both the Spec-CP of the intermediate clause and the Spec-CP of the most deeply embedded clause have to be empty at the surface (18a). If either position is occupied, the sentence is ungrammatical (18b–d).

(18) *Extraction affects intermediate Spec-CP:*

- a. Yeṅà yé Yâar tàak, [ké cí Bôl luéel, [yé
 who IMPF Yaar think C PRF.NS Bol.GEN say C
 cúkkú tíŋ]]?
 PRF.1PL see
 ‘Who does Yaar think that Bol said that we saw?’
- b. *Yeṅà yé Yâar tàak, [ké (a-)cí luéel, [yé cúkkú tíŋ]]?
 who IMPF Yaar think C Bol 3SG-PRF say C PRF.1PL see
 ‘Who does Yaar think that Bol said that we saw?’
- c. *Yeṅà yé Yâar tàak, [ké cí Bôl luéel, [yé wò cí
 who IMPF Yaar think C PRF.NS Bol.GEN say C we PRF
 tíŋ]]?
 see
 ‘Who does Yaar think that Bol said that we saw?’
- d. *Yeṅà yé Yâar tàak, [ké (a-)cí luéel, [yé wò cí tíŋ]]?
 who IMPF Yaar think C Bol 3SG-PRF say C we PRF see
 ‘Who does Yaar think that Bol said that we saw?’

Thus, Spec-CP and Spec-*v*P positions on the path of movement appear empty at the surface.

The picture gets more complicated when we turn to long-distance extraction through Spec-*v*P, but we defer a complete discussion of this until section 5. In section 5, we show that, although it may seem at first glance that long-distance extraction also empties Spec-*v*P, it is *not* actually the *wh*-phrase that is responsible for this. Instead, we will argue that it is actually the finite CP from which takes place that moves to Spec-*v*P. However, finite CPs undergo obligatory extraposition, so that this imitates the effects of long-distance extraction. This will form the basis for our argument that long-distance extraction requires a

syntactic relation between *v* and the CP from which the *wh*-phrase is extracted (Rackowski and Richards 2005; Den Dikken 2009a, 2012a,b; Halpert 2012).

Setting this complication aside for the moment, we propose that the pattern described in this section obtains because, in addition to being EPP positions, Spec-CP and Spec-*v*P are on the edge of a locality domain (e.g. a phase), so that extraction must proceed through them. We then maintain the generalization that, at the relevant stage of the derivation, Spec-CP and Spec-*v*P in Dinka are always occupied. Apparent exceptions only appear because the XP that fulfils this function may subsequently undergo movement.¹²

3.2 *Ke-stranding*

There is a second way in which the effects of successive cyclicity surface in Dinka, by means of a process we will refer to as *ke*-stranding. This process provides support for the picture sketched above and will function a useful diagnostic throughout this paper.

In Dinka, plural DPs strand a plural morpheme *ke* in each Spec-*v*P along the path of movement (*cf.* McCloskey 2000). The paradigm in (19a–b) illustrates. When a singular object is extracted, as in all the examples we have seen so far, the Spec-*v*P position appears empty (19a). When a plural object is the target of movement, however, it strands a plural morpheme *ke* in Spec-*v*P (19b).

(19) *Extraction of plural XP strands plural morpheme in Spec-*v*P:*

- a. Yeŋà cí Bôl tíŋ?
 who PRF.NS Bol.GEN see
 ‘Who did Bol see?’

¹²One striking thing about these facts is that they appear to strongly implicate movement, as EPP satisfaction is singularly a property of movement. In a movement approach, we can straightforwardly encode the generalization that underlies this pattern: Spec-CP and Spec-*v*P must contain an XP. In contrast, in theories that model long-distance dependencies without movement (e.g. Gazdar et al. 1984; Steedman 1987; Kaplan and Zaenen 1987; Sag and Fodor 1994; Bouma, Malouf, and Sag 2001; Goldberg 2006), we have to say that Spec-CP and Spec-*v*P require one of two apparently disparate requirements to hold: either they must either be occupied by an XP or they must be crossed by a long-distance dependency.

- b. Yèyîŋa cí Bôl tíŋ?
 who.PL PRF.NS Bol.GEN PL see
 ‘Who all did Bol see?’

This process is obligatory. Omitting the *ke* morpheme is ungrammatical (20).

(20) *Ke-stranding is obligatory:*

- *Yèyîŋa cí Bôl tíŋ?
 who.PL PRF.NS Bol.GEN see
 ‘Who all did Bol see?’

This happens in long-distance extraction also. When a plural DP is moved across a clause boundary, every Spec-*vP* position along the path of movement contains *ke* (21b).

(21) *Plural morpheme in every Spec-vP:*

- a. Yeŋà yé tàak, [cí Bôl tíŋ]?
 who IMPF.2SG think PRF.NS Bol.GEN see
 ‘Who do you think Bol saw?’
- b. Yèyîŋà yé tàak, [cí Bôl tíŋ]?
 who.PL IMPF.2SG PL think PRF.NS Bol.GEN PL see
 ‘Who all do you think Bol saw?’

Note that *ke*-stranding never happens in Spec-CP. It only ever affects Spec-*vP* positions.

As in cases of local extraction, *ke*-stranding is obligatory in long-distance extraction. Omitting *ke* in any Spec-*vP* results in ungrammaticality (22a–c).

(22) *Ke-stranding is obligatory in every Spec-vP:*

- a. *Yèyîŋà yé tàak, [cí Bôl tíŋ]?
 who.PL IMPF.2SG think PRF.NS Bol.GEN see

‘Who all do you think Bol saw?’

- b. *Yèyîŋà yé́ tàak, [cí Bòl kɛ́ tɪ́ŋ]?
who.PL IMPF.2SG think PRF.NS Bol.GEN PL see

‘Who all do you think Bol saw?’

- c. *Yèyîŋà yé́ kɛ́ tàak, [cí Bòl tɪ́ŋ]?
who.PL IMPF.2SG PL think PRF.NS Bol.GEN see

‘Who all do you think Bol saw?’

The process of *ke*-stranding then offers additional evidence for successive cyclicity, at least in the *v*P domain, as features associated with the *wh*-phrase end up in Spec-*v*P positions along the path of movement. It then provides support for the idea that long-distance extraction of an XP touches down in every Spec-*v*P position on the path of movement.

Taken together, these two phenomena — EPP satisfaction as a result of movement and *ke*-stranding — constitute evidence for the idea that long-distance dependencies involve a sequence of movement steps through the edge of each verb phrase and the edge of each clause (Chomsky 1986, 2000, 2001, 2008).

4 PP extraction and a case restriction on Spec-*v*P

Our discussion thus far has concentrated on the extraction of DPs. We now turn to PP extraction, which differs from DP extraction in illuminating ways. In particular, we will demonstrate that the facts of PP extraction offer independent support for the view of Dinka we have just developed. In addition, this discussion will allow us to set the stage for section 5, in which we argue that long-distance extraction in Dinka also requires a syntactic relation between *v* and the CP from which extraction takes place.

We start with the observation, made in section 2, that low PP adjuncts, such as locatives or instrumentals, cannot appear in Spec-*v*P, not even in an intransitive (23a–b).

(23) *Adjuncts cannot occupy Spec-vP:*

- a. Wò cí kèt dòm-íc.
 we PRF sing garden-in
 ‘We sang in the garden.’
- b. *Wò cí dòm-íc kèt.
 we PRF garden-in sing
 ‘We sang in the garden.’

The same is true for PP arguments, such as the locative argument of *tuɔɔc* (‘send’) (24a–b).

(24) *PP argument cannot appear in Spec-vP:*

- a. Bòl a-cí Dɛ̀ŋ tuɔɔc wúút.
 Bol 3SG-PRF Deng send cattle.camp.LOC
 ‘Bol sent Deng to the cattle camp.’
- b. *Bòl a-cí wúút tuɔɔc Dɛ̀ŋ.
 Bol 3SG-PRF cattle.camp.LOC send Deng
 ‘Bol sent Deng to the cattle camp.’

The facts in (24a–b) appear to rule out an approach in which the PPs in question are unable to move to the specifier of *vP* because they are generated outside *vP*. It is hard to see how conditions on selection would allow locative arguments to be generated outside *vP*. We propose then that the EPP property of *v* is associated with its role as a case assigner, so that only phrases which are assigned Case by *v* may satisfy its EPP requirement.¹³ PPs lack a Case requirement and therefore cannot move to the specifier of *vP* for EPP.

Now observe that this restriction on the EPP property of *v* also shows up under extraction. Extraction of argument or adjunct PPs fails to empty the specifier of *vP* (25a–b).

¹³This amounts to saying that *v*’s Case feature is a *strong* feature (Chomsky 1995), or, equivalently, that it has the EPP subproperty (Pesetsky and Torrego 2001).

(25) *Locative and instrumental extraction does not block movement to Spec-vP:*

- a. Yétenô cí yín thòk yòoc?
 where PRF.NS you goat buy.TR
 ‘Where did you buy a goat?’
- b. Yeŋó cí yín kòor nòk?
 what PRF.NS you lion kill
 ‘What did you kill a lion with?’
- c. Yétenô cénné Bôl Dɛŋ tuòoc?
 where PRF.OBL Bol.GEN Deng send
 ‘Where did Bol send Deng?’

The Spec-*vP* positions in these examples are obligatorily filled by objects, just as if extraction had not occurred.

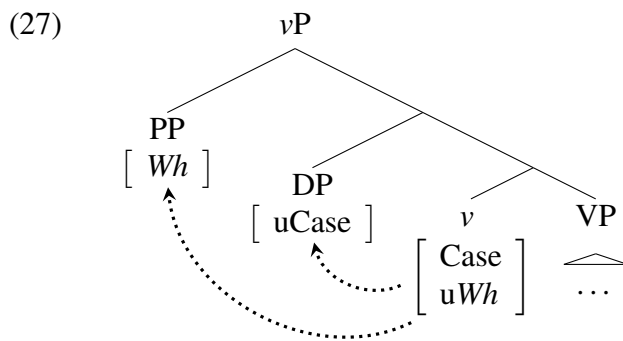
Does the failure to satisfy *v*’s EPP requirement indicate that these *wh*-phrases do not exit *vP* via its edge? That would be surprising, given our current understanding of phase impenetrability. In addition, this suggestion would be inconsistent with data from Dinka’s other diagnostic for successive-cyclic movement, *ke*-stranding. Although they do not cause Spec-*vP* to appear empty, extracted locatives and instrumentals, when plural, *do* strand the plural morpheme *ke* on the edge of *vP*, just as plural DPs do. This is illustrated for *wh*-movement in (26a–b). The same point is made by the topicalization example in (26c), taken from a Dinka Christmas hymn.

(26) *Plural instrumentals and locatives strand a ke in Spec-vP:*

- a. Ye bɛɛi kó cénné nyankái [ké wanmáth tuòoc]?
 Q villages which PRF.OBL sister PL brother send
 ‘Which villages did my sister send my brother to?’

- b. Ye piú k̄e-dì cí Bôl [ké b̄ambée] thàal]?¹⁴
 Q water much-how PRF.NS Bol.GEN PL sweet.potatoes cook.TR
 ‘With how much water did Bol cook sweet potatoes?’
- c. W̄ ð bínné [ké Yécu] dhièth].¹⁵
 we FUT.OBL PL Jesus be.born
 ‘Jesus will be born for us.’ (Dinka Christmas hymn)

Thus, we have evidence that these XPs *do* exit via the edge of *vP*; their movement simply fails to empty the *vP* edge. We formalize this observation by positing two movement-driving features on *v*: one specifically associated with Case and another which triggers *wh*-movement.¹⁶ In examples like (26a), these two features must be satisfied by different phrases; *ye b̄èxi k̄ó* (‘to which villages’) is a *wh*-phrase but is inactive for Case, while *wanmáth* (‘brother’) is active for Case but is not a *wh*-phrase (here we have omitted the subject, for ease of exposition):



Thus, in (27), movement of the locative *wh*-phrase *ye b̄èxi k̄ó* (‘to which villages’) is driven

¹⁴Mass nouns like *p̄ú* (‘water’) are formally plural in Dinka.

¹⁵There is no promotion to subject in the Dinka passive, so that *Yecu* is still in an object position.

¹⁶This means that we are adopting a *featural* view of intermediate movement (Chomsky 1995; Preminger 2011). To be precise, we adopt the model of *wh*-movement suggested by Preminger (2011). A crucial component in this approach is the idea that a failure of Agree does not induce ungrammaticality. As a result, an unvalued *wh*-feature can be present on all phase heads. If a *wh*-phrase is present, this results in intermediate movement to the phase edge. If a *wh*-phrase is absent, then probing fails, but, since failures of Agree do not induce a crash, this is harmless. Similarly, we could assume that *v* always carries a Case feature, but that probing fails when a suitable object is not present.

only by the *wh*-feature of *v*, while movement of *wanmáth* (‘brother’) is driven only by the Case feature of *v*. Further *wh*-movement of the PP will strand *ke* in the position the PP currently occupies, yielding the word order in (26a).¹⁷ By contrast, in examples like (16c–d), repeated here as (28a–b), both features of *v* may be satisfied by a single phrase; *yeŋó* (‘what’) is both a *wh*-phrase and a DP with an active Case feature:

(28) *Object extraction requires empty Spec-vP:*

- a. Yeŋó cí mòc yiĕn Ayén?
 what PRF.NS man.GEN give Ayen
 ‘What did the man give Ayen?’
- b. *Yeŋó cí mòc Ayén yiĕn?
 what PRF.NS man.GEN Ayen give
 ‘What did the man give Ayen?’

Examples such as (28b), on this account, have to be ruled out by means of an Economy condition like the one in (29) (see Pesetsky and Torrego 2001 and Richards 2012 for a similar proposal):

(29) **Multitasking:**

At every step in a derivation, if two operations A and B are possible, and the features checked by A are a superset of those checked by B, the grammar prefers A.

Multitasking rules out (28b), since this example involves checking the Case and *wh*-features of *v* with separate phrases, when only one would do, as in (28a).¹⁸ This makes (28b) uneco-

¹⁷The relative positions of the two specifiers appear to be fixed. The *ke* morpheme cannot appear after *wanmáth* (‘brother’) in (26a–b). Perhaps this ordering restriction reflects conditions on the placement of the *ke* clitic. We could imagine, for example, that *ke* must be initial within the *vP* phase.

¹⁸It is important for us that these two possible derivations are fed by the same underlying structure. We then posit that *v* licenses both DPs in a ditransitive, by means of a Multiple Agree relation. This also explains why both objects show up in the unmarked case.

nominal, as it requires an extra movement step not necessary in (28a). The representation in (27), by contrast, does not run afoul of Multitasking, since the two movement operations to the edge of ν P are triggered by different features, and neither phrase can satisfy both features.

We have seen then that the EPP property of ν has the same nature in extraction and non-extraction contexts: a PP cannot satisfy the EPP property of ν , regardless of whether the PP is a *wh*-phrase.

PP extraction through Spec-CP provides support for this view. We have already seen that the specifier of CP is less discriminating than the edge of ν P. As is standard in V2 languages, the specifier of CP in Dinka may seemingly be occupied by any phrase at all:

(30) *Adjuncts can occupy Spec-CP:*

Rók a-bíi Càn aléth yòc Bòl.
 town 3SG-FUT.NS Can.GEN clothes buy.DTR Bol
 ‘Can bought Bol clothes at the town.’

Since PPs can occupy the specifier of CP, PP extraction from CP then *should* empty the edge of CP, just as DP extraction does. And indeed, extraction of a PP from an embedded clause blocks movement to the specifier of CP for that clause:

(31) *Extraction of an adverbial phrase blocks movement to Spec-CP:*

- a. Yétenô cúkkú luéel, [] cí wòok kitàp yòoc]?
 where PRF.1PL say PRF.NS we.GEN book buy.TR
 ‘Where did we say that we bought a book?’
- b. *Yétenô cúkkú luéel, [kitàp] (a-)cí wòok yòoc]?
 where PRF.1PL say book 3SG-PRF.NS we.GEN buy.TR
 ‘Where did we say that we bought a book?’

Thus, the distribution of EPP satisfaction under *wh*-movement is the same as in declaratives: DPs, but not PPs, may satisfy the EPP property of *v*, and any phrase may satisfy the EPP property of C. These conditions hold both for *wh*-phrases and for non-*wh*-phrases, providing additional support for our proposal that the EPP property of Dinka Spec-CP and Spec-*v*P may be satisfied by successive-cyclic movement.

We are now ready to turn to the profile of long-distance extraction through Spec-*v*P. We will show that, in addition to providing strong evidence for successive-cyclic movement, Dinka offers support for the idea that extraction must be accompanied by an Agree relation between *v* and the CP from which extraction takes place, as proposed by Rackowski and Richards (2005), Den Dikken (2009, 2012a,b), and Halpert (2012).

5 The role of complement clauses in extraction

In section 3, we saw that *wh*-movement satisfies the EPP property of intervening Spec-CP and Spec-*v*P positions. We showed that this true for monoclausal extraction through Spec-*v*P and for all Spec-CP positions that lie on the path of movement.

At first glance, this pattern appears to extend to long-distance extraction through Spec-*v*P. Extraction from a finite clause embedded by a ditransitive verb requires that the *v*P immediately dominating that clause have an empty specifier:

(32) *Argument extraction requires empty higher Spec-*v*P:*

- a. Yàar a-cí (Dèŋ) lɛ́k, [yè Bòl a-cí (Ayén) tùòc wúut].
 Yaar 3SG-PRF Deng tell C Bol 3SG-PRF Ayen send cattle.camp.LOC
 ‘Yaar told Deng that Bol sent Ayen to the cattle camp.’
- b. Yeŋà cí Yàar () lɛ́k Dèŋ, [yè () cí Bòl
 who PRF.NS Yaar.GEN tell Deng C PRF.NS Bol.GEN

Evidence for this proposal comes from independently observable properties of finite CPs in Dinka. In particular, finite CPs generally have the option of moving to Spec-CP and Spec-*vP* in Dinka, as long as they subsequently extrapose. We can illustrate this with ditransitives. In a clause containing a ditransitive verb which takes two DP objects, one of the two objects must occupy the specifier of *vP*, and the specifier of CP must, as usual, be filled:

(33) *Spec-CP and Spec-vP must be occupied:*

- a. Bòl a-cí Dèŋ lɛ́k akókòl.
 Bol 3SG-PRF Deng tell story
 'Bol told Deng a story.'
- b. Bòl a-cí akókòl lɛ́k Dèŋ.
 Bol 3SG-PRF story tell Deng
 'Bol told Deng a story.'
- c. *Bòl a-cí lɛ́k Dèŋ akókòl.
 Bol 3SG-PRF told Deng story
 'Bol told Deng a story.'
- d. * a-cí Bòl lɛ́k Dèŋ akókòl.
 3SG-PRF Bol.GEN tell Deng story
 'Bol told Deng a story.'

However, when one of these objects is a finite CP, the edge positions in the matrix clause can appear empty:

(34) *Spec-CP and Spec-vP can be empty if there is a CP complement:*

- a. Bòl a-cí Dèŋ lɛ́k [Ayén a-cí kitàp yòoc].
 Bol 3SG-PRF Deng tell Ayen 3SG-PRF book buy
 'Bol told Deng [that Ayen bought a book].'

- b. Bòl a-cí lɛ̀k Dèŋ [Ayén a-cí kitàp yòoc].
 Bol 3SG-PRF tell Deng Ayen 3SG-PRF book buy
 'Bol told Deng [that Ayen bought a book].'
- c. a-cí Bòl lɛ̀k Dèŋ [Ayén a-cí kitàp
 3SG-PRF.NS Bol.GEN tell Deng Ayen 3SG-PRF book
 yòoc].
 buy
 'Bol told Deng [that Ayen bought a book].'

We see the same with transitive verbs. Spec-*vP* is always empty (the CP cannot appear there) (35a–b), and Spec-CP may appear empty also (35b).

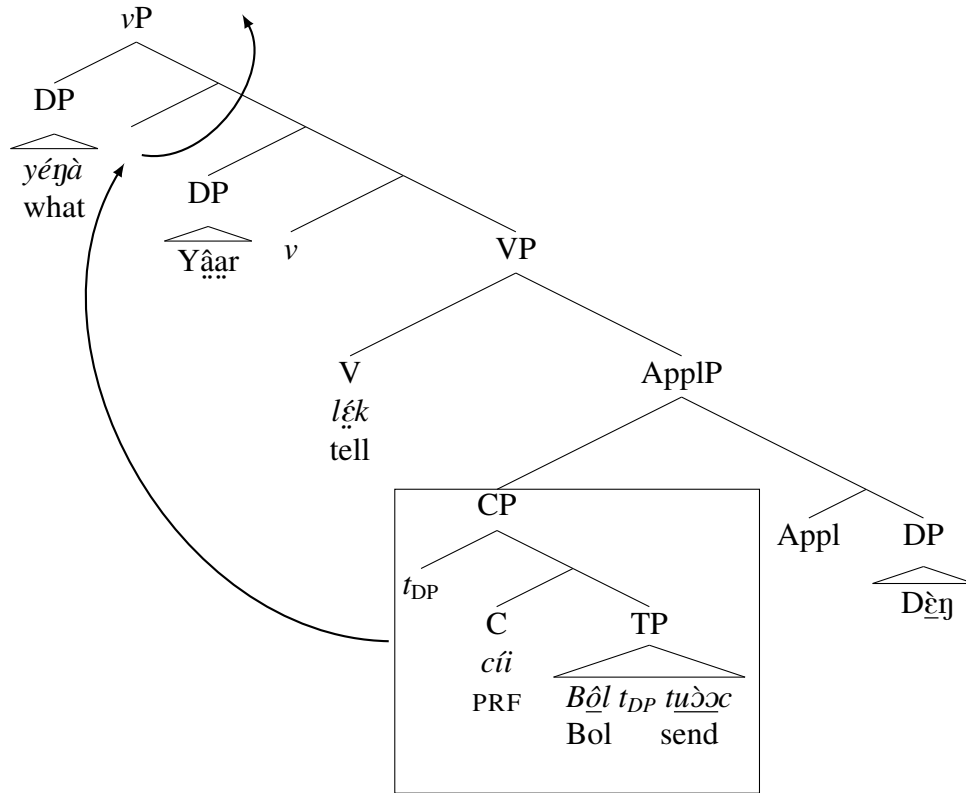
(35) *Spec-CP and Spec-vP can be empty also in transitive with CP complement:*

- a. Yàar a-cí luéél, [a-cí nín].
 Yaar 3SG-PRF say 3SG-NEG sleep
 'Yaar said that he isn't sleeping.'
- b. a-cí Yàar luéél, [a-cí nín].
 3SG-PRF.NS Yaar.GEN say 3SG-NEG sleep
 'Yaar said that he isn't sleeping.'

To account for this pattern, we propose that complement CPs, like other XPs, may move to Spec-*vP* and Spec-CP. However, unlike other XPs, Dinka complement CPs are subject to an independent constraint, which forces them to appear sentence-finally. As a result, when a complement CP moves to an EPP position, it must subsequently undergo extraposition. This is then why Spec-CP and Spec-*vP* can appear empty when a complement clause appears in the clause.

Support for this way of viewing the facts in (34a–c) and (35a–b) comes from an implica-

(38)



We suggest then that this is actually what is going on in cases of long-distance extraction from finite clauses. The CP from which extraction takes place moves to the specifier of vP and undergoes extraposition. On this account, then, Spec- vP in (37) is emptied, not by the moved *wh*-phrase, but by the embedded CP itself. Moreover, extraction from CP apparently requires that the CP undergoes these movements. As we saw, movement of CP to the specifier of vP , which is ordinarily optional (*cf.* examples 34a–c and 35a–b), becomes *obligatory* when \bar{A} -extraction exits the CP. We then arrive at the descriptive generalization that a clause from which extraction takes place must move to the specifier of vP if it can.

We return to this generalization shortly, but, first, we will offer two pieces of evidence in support of our way of viewing long-distance extraction through Spec- vP is correct. Our first argument involves the behavior of nonfinite clauses in Dinka. As we can see with an object control verb like $l\acute{\imath}\eta$ ('encourage'), which takes a DP and a non-finite clause as its

objects, such clauses cannot move to Spec-vP or Spec-CP:

(39) *Non-finite clauses cannot move to Spec-vP or Spec-CP:*

- a. Cà̀n a-cí Adít l̩̀ŋ [bí jà̀l].
 Can 3SG-PRF Adit encourage FUT leave
 ‘Can encouraged Adit to leave.’
- b. *Cà̀n a-cí _____ l̩̀ŋ Adít [bí jà̀l].
 Can 3SG-PRF _____ encourage Adit FUT leave
 ‘Can encouraged Adit to leave.’
- c. *_____ a-cí Cằn _____ l̩̀ŋ Adít [bí jà̀l].
 3SG-PRF.NS Can.GEN _____ encourage Adit FUT leave
 ‘Can encouraged Adit to leave.’

In addition, in clear contrast to extraction from finite clauses, extraction from non-finite clauses fails to empty the matrix specifier of vP:²⁰

(40) *Extraction out of non-finite clause never empties higher Spec-vP:*

- a. Yekà̀ŋú cí Adít [ké Cà̀n] l̩̀ŋ [bí ké yò̀oc]]?
 what.things PRF Adit PL Can encourage FUT PL buy
 ‘What things did Adit encourage Can [to buy t]?’
- b. Yétenô cí Adít [Cà̀n] l̩̀ŋ [bén Bò̀l tùòc]]?
 where PRF Adit Can encourage FUT.LOC Bol send
 ‘Where did Adit encourage Can [to send Bol t]?’

Our second argument involves long-distance extraction of PPs. We have seen that local extraction of PPs does not empty Spec-vP:

²⁰Note that we can verify from the *ke*-stranding example in (40a) that the Spec-vP position of the object control verb *l̩̀ŋ* (‘encourage’) is nonetheless used as an intermediate landing site.

(41) *PP extraction does not block movement to Spec-vP:*

Yétenô cénné Bôl (Dɛ̃ŋ) tuðɔc?

where PRF.OBL Bol.GEN Deng send

‘Where did Bol send Deng?’

However, long-distance extraction of PPs *does* empty Spec-vP in the matrix clause, just when extraction is from a finite clause:

(42) *PP extraction out of finite clause causes higher Spec-vPs to be empty:*

a. Yétenô cí Yâar () lɛ̃k Dɛ̃ŋ, [yè ___ cí Bôl
 where PRF.NS Yaar.GEN tell Deng C PRF.NS Bol.GEN

(Ayén) tuðɔc]?

Ayen send

‘Where did Yaar tell Deng [that Bol sent Ayen *t*]?’

b. *Yétenô cí Yâar (Dɛ̃ŋ) lɛ̃k, [yè ___ cí Bôl (Ayén)
 where PRF.NS Yaar.GEN Deng tell C PRF.NS Bol.GEN Ayen

tuðɔc]?

send

‘Where did Yaar tell Deng [that Bol sent Ayen *t*]?’

These facts demonstrate that whether the Spec-vP position of the matrix clause in a long-distance question is empty or not is determined, not by properties of the moved *wh*-phrase, but by properties of the embedded clause. The Spec-vP position in question is empty just if the embedded clause is of the type which is capable of emptying it (that is, if the clause is finite), regardless of the properties of the moved *wh*-phrase. In other words, in long-distance extraction through Spec-vP, it is irrelevant whether the *wh*-phrase is a DP or not, in strong contrast to the behavior of monoclausal *wh*-extraction through the same

are just those which should be in an Agree relation with v (that is, complements of the verb); extraction from phrases which do not Agree with v (subjects and adjuncts) is blocked.

Dinka thus provides evidence that the syntax of long-distance extraction involves *at least two components*: intermediate movement steps and an Agree relations between embedding v and the CP to be extracted from. This is an important conclusion, as many models of successive cyclicity assume one but not the other. A number of proposals either do away with Agree or featural triggers as a component in initiating intermediate movement (e.g. Bošković 2002, 2007; Chomsky 2008). Conversely, Rackowski and Richards (2005) and den Dikken (2009, 2012a,b) argue that agreement circumvents phase boundaries, obviating the need for intermediate movement either in some or in all cases.

In the next section, we turn to the question of why both of these components — phase impenetrability and successive Agree relations — should be necessary parts of the syntax of long-distance dependencies. We propose a modification of Rackowski and Richards (2005), according to which Agree with a CP allows the higher v to access the CP edge.

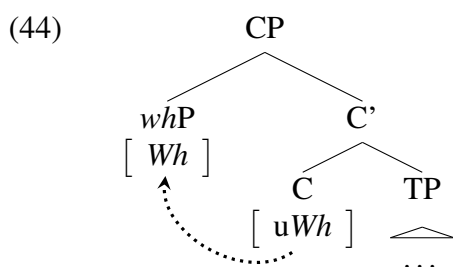
6 Phases as interveners for *wh*-probing

We have seen that Dinka leads us to the conclusion that the syntax of long-distance extraction involves two components: intermediate successive-cyclic movement and agreement between phase heads. In this section we develop a modified version of Rackowski and Richards (2005), which incorporates these both of these components.

The starting point for the theory of Rackowski and Richards (2005) is the idea that if a CP (for example) contains a *wh*-phrase, then both the *wh*-phrase and the CP itself are possible Goals for a higher Probe which seeks *wh*-phrases. In fact, it will be important to develop a theory of locality in which the dominating CP is actually a *closer* potential Goal

to higher Probes; this will be the key to forcing higher Probes to Agree with the dominating CP before they can Agree with the *wh*-phrase.

We might formalize the idea that a CP dominating a *wh*-phrase is a potential Goal for *wh*-probes in a number of ways. For present purposes, we will assume, as we also did in section 4 (see fn. 16), that a phase head with a *wh*-phrase in its specifier must have a feature which is responsible for driving this *wh*-movement, even if the CP is declarative (Chomsky 1995, Preminger 2011). On this view, a declarative CP from which *wh*-extraction takes place successive-cyclically has, at one point in the derivation, the partial structure in (44):



Since CP and the *wh*-phrase both carry *wh*-features, we propose that they are both potential Goals for higher probes seeking *wh*-features. We can now ensure that CP will be the closer of the two Goals for higher probes by defining the notion of *closeness* along the following lines:²¹

(45) **Definition of closeness:**

A goal A is a *closer goal* for an Agree relation with a probe P than a goal B if A is distinct from B and every node that dominates A also dominates B.

Assuming that Agree must target the closest goal, the condition in (45) guarantees that a

²¹Rackowski and Richards (2005) offer a more complex definition of locality, which is intended not only to force Agree between phase heads but also to derive phase impenetrability. Their definition has the consequence that successive-cyclic movement must move through the edges of intervening *v*Ps, but may freely skip intervening CPs. The Dinka facts seem to demonstrate that this is untenable, at least for Dinka; successive-cyclic movement does indeed stop at the edge of every phase. We will therefore make use of the locality condition in (45), assuming that phase impenetrability is a separately enforced condition.

Goal A is more accessible to higher Probes than a distinct Goal B if A either c-commands or dominates B. By this definition, the CP in (44) is a more accessible Goal for higher *wh*-probes than the *wh*-phrase itself, since the CP dominates the *wh*-phrase. This effectively incorporates Chomsky's (1964) A-over-A principle into the definition of intervention. See also Kitahara (1997) and Müller (1998) for arguments from constraints on remnant movement that this is a desirable move.

Adopting this view, we must now ask how the *wh*-phrase is to be extracted. Here we follow much work on multiple *wh*-constructions (Richards 1998, Hiraiwa 2001) in claiming that a Probe may Agree with multiple distinct Goals, as long as it does not 'skip' the highest potential Goal in favor of more deeply embedded Goals. For example, a Probe may Agree with two Goals, one structurally higher than the other, as long as they are the highest Goals in the search space; the fact that one of the Goals is higher than the other does not disqualify the lower Goal from being Agreed with. Rackowski and Richards (2005) present this idea via a version of Richards' (1998) Principle of Minimal Compliance:

- (46) Once a probe P Agrees with a Goal G, P can ignore G for the rest of the derivation.
(Richards 1998; Hiraiwa 2001; Rackowski and Richards 2005)

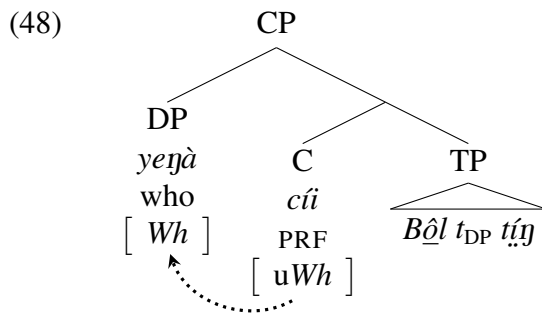
Whether the precise formulation in (46) is the correct one or not is not very important for our account; some version of (46) must presumably be true for multiple *wh*-questions to exist at all.

The locality condition in (45), paired with the condition on multiple Probing in (46), will guarantee that in a configuration like the one in (44), higher Probes seeking to extract the *wh*-phrase must Agree both with the *wh*-phrase and with the CP dominating it. As we saw in the last section, the facts of Dinka support this conclusion; extraction from a tensed CP requires that *v* Agree with the CP, moving it to the specifier of *v*P (after which the clause will extrapose, leaving the specifier position empty).

Let us illustrate this system with an explicit derivation along these lines. We focus on the example in (47).

- (47) Yeŋà yé tàak, [cí Bôl tíŋ]?
 who IMPF.2SG think PRF.NS Bol.GEN see
 ‘Who do you think Bol saw?’

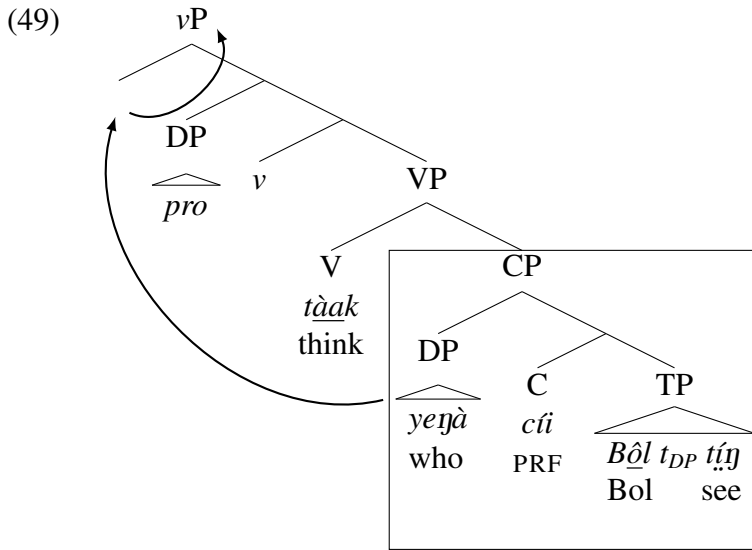
The lower C is endowed with a *wh*-feature (as all C heads are), which attracts the *wh*-phrase to Spec-CP:



Matrix *v* is also endowed with a *wh*-feature. It probes and tries to access the *wh*-phrase in the lower Spec-CP. However, because the embedded CP also carries a *wh*-feature, it acts as an intervener for the Agree relation between *v* and the *wh*-phrase by the logic in (45). As a result, an independent Agree relation between *v* and the CP is necessary for the derivation to converge.²² We posit that this Agree relation involves the same Case checking operation that attracts DPs to Spec-*v*P.²³ This is accompanied by movement of the CP to Spec-*v*P:

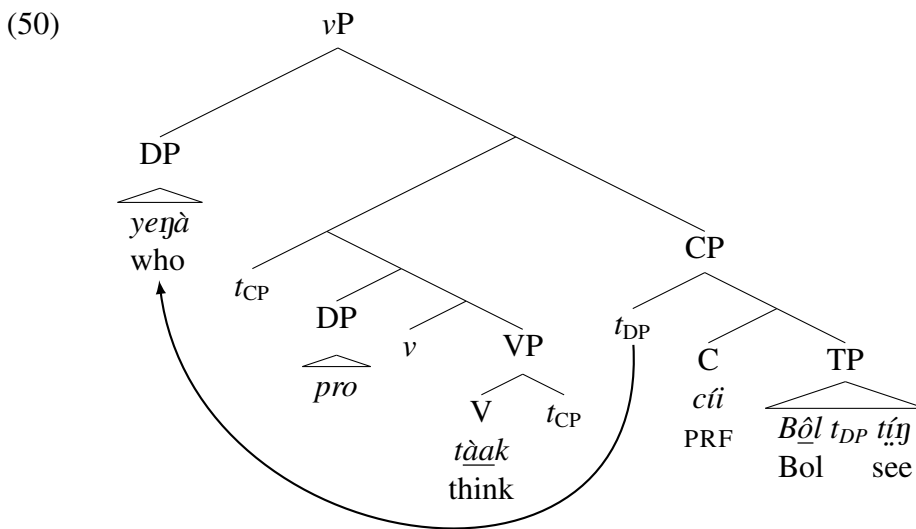
²²It is crucial here that the CP is a *defective* intervener, so that, although it acts as an intervener for *wh*-probing, it would not be a suitable goal. This could be achieved by stipulating that *wh*-probing must target the *interpretable* instance of the *wh*-feature, which is only found on the *wh*-phrase. We could allow for variation in this restriction, since there are languages in which clausal pied-piping can be used in long-distance dependencies, such as Basque (e.g. Arregi 2003).

²³We posit then that CPs can check Case in Dinka. Indeed, if our extraposition analysis is on the right track, there are no distributional differences between DPs and CPs in Dinka, like there are in English. The only difference between them is that CPs obligatorily extrapose, causing them to appear sentence-finally.



The CP subsequently undergoes extraposition, which, as previously discussed, we assume is driven by independent constraints on CPs in Dinka. We will represent extraposition as rightward adjunction to v .

Because this Agree relation between v and CP allows v to ignore CP as a goal, v can now access the wh -phrase in Spec-CP. The wh -phrase can then be attracted to Spec- vP , from which it later undergoes movement to matrix Spec-CP:



As a result, matrix Spec- ν P is obligatorily empty. Both XPs that satisfy ν 's features must undergo subsequent movement: the CP because Dinka requires CPs to extrapose, and the *wh*-phrase because it must move to matrix Spec-CP to be interpreted.²⁴

7 Beyond Dinka

In the course of developing our account of the syntax of long-distance extraction in Dinka, we have made a number of claims that need to be evaluated in a larger linguistic context. First, we have argued that extraction from a CP requires an Agree relation between the embedding ν and the CP. In section 7.1, we show that Dinka is part of a growing set of languages in which such effects have been documented (Rackowski and Richards 2005; Den Dikken 2009a, 2012a,b; Halpert 2012). Second, our derivation of long-distance dependencies in Dinka involves movement from an extraposed clause. In section 7.2, we provide evidence that this is possible and that extraposed CPs are not barriers to extraction. Third, the theory presented here makes the prediction that, alongside an Agree relation between ν and CP, we should see effects of an Agree relation between C and ν P. Section 7.3 discusses this prediction.

7.1 *The role of agreement across languages*

There are other languages in which it has been argued that agreement plays a role in facilitating extraction (Rackowski and Richards 2005; Den Dikken 2009a, 2012a,b; Halpert 2012). In this section, we review some of these patterns, and demonstrate that Dinka is part of a typologically diverse set of languages.

In Tagalog, this pattern shows up with agreement morphology on the verb (Rackowski

²⁴We propose that non-finite clauses are not phases, as they appear to lack a C layer in Dinka. As a result, there is no need for agreement with them as they will never act as interveners.

and Richards 2005). The Tagalog verb can enter into agreement with various arguments in the clause (Rackowski and Richards analyze this as case agreement, but nothing hinges on this for our purposes). In (51a), for example, the verb agrees with the subject, while, in (51b), the verb agrees with the clause.

(51) *Tagalog verb agrees for case:*

- a. **M**-agsa-sabi ang kalabaw [na masarap ang bulaklak].
NOM-ASP-say ANG water.buffalo that delicious ANG flower
 ‘The water buffalo will say that the flower is delicious.’
- b. Sa-sabih-**in** ng kalabaw [na masarap ang bulaklak].
ASP-say-ACC CS water.buffalo that delicious ANG flower
 ‘The water buffalo will say that the flower is delicious.’
 (Rackowski & Richards 2005:586)

The important observation is now that the verb must agree with an embedded clause if an XP is extracted from within that clause (52a–d).

(52) *Extraction requires agreement with embedded clause:*

- a. Kailan [sa-sabih-**in** ng sundalo [na u-uwi ang pangulo]]?
 when **ASP-say-ACC** CS soldier that **NOM.ASP-go.home** ANG president
 ‘When will the soldier say that the president will go home?’
- b. *Kailan [**m**-agsa-sabi ang sundalo [na u-uwi ang
 when **NOM-ASP-say** ANG soldier that **NOM.ASP-go.home** ANG
 pangulo]]?
 president
 ‘When will the soldier say that the president will go home?’
 (Rackowski & Richards 2005:586)

A similar pattern exists in Chamorro (Chung 1998; Den Dikken 2009b). In this way, Tagalog and Chamorro, just like Dinka, require a syntactic relation between the embedding *v* and the CP from which extraction takes place. In Tagalog and Chamorro, the reflex of this is agreement morphology on the verb. In Dinka, this relation manifests itself as movement to Spec-*v*P.

Welsh also shows agreement under extraction that appears to instantiate this logic. As described by Willis (2008), Welsh has an object agreement clitic that optionally appears when an aspectual particle is present (53a–b).²⁵

(53) *Object agreement optionally appears with aspectual auxiliaries:*

- a. Mae Megan wedi **ei** ddwyn e.
 be.PRES.3SG Megan PERF 3MS steal.INF it.MS
 ‘Megan has stolen it.’
- b. Mae Megan wedi dwyn e.
 be.PRES.3SG Megan PERF steal.INF it.MS
 ‘Megan has stolen it.’

Willis (2008) shows that this object agreement may exceptionally appear on intermediate verbs in the context of a long-distance dependency (54).²⁶

(54) *Object agreement may appear on intermediate verbs:*

- Beth wyt ti 'n **ei** feddwl [bod hyn yn **ei** olygu]?
 what be.PRES.2SG you PROG 3MS think.INF be.INF this PROG 3MS mean.INF
 ‘What do you think this means?’

As Willis observes, however, this intermediate agreement does not reflect the ϕ -features of

²⁵As evident in (53a–b), the clitic also triggers a soft mutation on the following infinitival verb.

²⁶We follow Willis (2008) in taking the Welsh object gaps under discussion to be formed by movement and not resumption (contra Rouveret 2008). See Willis (2008) for arguments.

the *wh*-phrase. Rather, it always surfaces as 3rd person masculine singular (55a). In addition, it may appear even with extraction of adjuncts (55b), which otherwise never trigger object agreement.

(55) *Intermediate object agreement does not reference wh-phrase:*

- a. Pa lyfrau wyt ti 'n ei feddwl [oedd Megan
 which books be.PRES.2SG you PROG 3MS think.INF be.IMPF.3S Megan
 yn eu darllen]?
 PROG 3PL read.INF
 'Which books do you think Megan was reading?'
- b. Ble wyt ti 'n ei feddwl [mae e 'n
 where be.PRES.2SG you PROG 3MS think.INF be.PRES.3SG he PROG
 mynd]?
 go.INF
 'Where do you think he's going?'

We propose that this object agreement clitic then reflects an Agree relation between the verb and the clause that is extracted from. This explains why it is invariantly 3rd person singular, as clauses do not vary in ϕ -features.

Den Dikken (2009, 2012b) argues for the existence of another pattern along these lines for Hungarian. Finally, in the realm of A-movement, Halpert (2012) argues that raising of a finite clause in Zulu is made possible by agreement between the raising verb and the complement CP.

In all of these cases, then, extraction is accompanied by an Agree relation between the verb and the embedded CP, though this may manifest itself syntactically in a variety of ways. As a result, evidence for the role of Agree in facilitating long-distance extraction manifests itself in a typologically diverse set of languages, including Chamorro, Dinka,

Hungarian, Tagalog, Welsh, and Zulu.

One of the contributions of this paper is to show that this aspect of the syntax of long-distance extraction must exist side-by-side with the notion of phase impenetrability and successive-cyclic movement, contra Rackowski and Richards (2005) and Den Dikken (2009, 2012a,b), since Dinka offers such striking evidence for the successive cyclic nature of long-distance movement.

7.2 *On extraction from an extraposed CP*

In the derivation we proposed for Dinka long-distance extraction in sections 5 and 6, extraction takes place from a CP that undergoes movement. This may at first glance seem at odds with some data about extraction from CPs in other languages. In this section, we review these facts and argue that extraposed CPs never induce such effects.

As noted above, movement of CP seem to create freezing effects in a number of languages. We see this, for example, in English pairs like (56a–b).

(56) *Movement of CP blocks extraction in English:*

- a. What is it unlikely [that John said *t*]?
- b. *What is [that John said *t*] unlikely?

But we find the same effect with CP objects. Vicente (2005), for example, shows that, in Basque, movement of CP renders extraction impossible. CPs can surface both to the right and to the left of the verb (57a–b).

(57) *CPs occur on both sides of the verb in Basque:*

- a. Jonek ez du uste [Mirenek liburua irakurri duenik].
Jon no AUX think Miren book read AUX.C
'Jon doesn't think that Miren read a book.'

- b. Jonek ez du [Mirenek liburua irakurri duenik] uste.
 Jon no AUX Miren book read AUX.C think
 ‘Jon doesn’t think that Miren read a book.’
 (Basque; Vicente 2005:366)

However, when a CP surfaces to the left of the verb (in what Vicente argues is an A-position), extraction of a *wh*-phrase from within that CP is blocked (58a–b).

(58) *Extraction from moved CP impossible in Basque:*

- a. Zer ez du Jonek uste [Mirenek *t* irakurri duenik]?
 what no AUX Jon think Miren read AUX.C
 ‘What doesn’t Jon think Miren has read?’
- b. *Zer ez du Jonek [Mirenek *t* irakurri duenik] uste?
 what no AUX Jon Miren read AUX.C think
 ‘What doesn’t Jon think Miren has read?’
 (Basque; Vicente 2005:366)

A similar pattern obtains in Dutch.²⁷ CPs can undergo scrambling and appear left of the verb (59a), though they normally surface to the right (59b).

(59) *CPs may undergo scrambling in Dutch:*

- a. Ik had [dat hij dat zou zeggen] niet verwacht.
 I had that he that would say.INF not expected
 ‘I had not expected that he would say that.’
- b. Ik had niet verwacht [dat hij dat zou zeggen].
 I had not expected that he that would say.INF
 ‘I had not expected that he would say that.’

²⁷Our thanks to an anonymous NELS reviewer for pointing out the relevance of these facts, which formed the impetus for this part of the paper.

When this happens, however, extraction from within the scrambled CP is completely blocked (60a–b).

(60) *Extraction from scrambled CP impossible in Dutch:*

- a. Wat had je niet verwacht [dat hij *t* zou zeggen]?
what had you not expected that he would say.INF
'What had you not expected that he would say?'
- b. *Wat had je [dat hij *t* zou zeggen] niet verwacht?
what had you that he would say.INF not expected
'What had you not expected that he would say?'

Such facts seem to suggest that movement of a CP is not compatible with extraction, which may be problematic for the current account.

However, extraposed clauses do not appear to pattern like other moved CPs. We see this already in the Dutch examples given above. DP objects ordinarily appear preverbally in Dutch. We could then take the peripheral position of CPs to be the result of extraposition. As (60a) shows, extraction from a final CP is grammatical.

Similarly, in English, extraposition of CP does not block *wh*-movement (61).

(61) *Extraposition of CP does not block extraction in English:*

What did you say yesterday [that she wants to do *t*]?

In fact, there is some evidence that CP extraposition may even feed extraction. Taraldsen (1981) observes that relative clauses in Norwegian can be extracted from, but only if they are extraposed (62a–e).²⁸

²⁸Norwegian appears to not obey *wh*-islands, the presence of which presumably blocks such derivations in English.

(62) *Relative clause extraposition feeds extraction in Norwegian:*

- a. *Her er en bok som [ingen [CP som leser]] blir lykkelig.
here is a book that nobody that reads becomes happy
'Here is a book that nobody who reads it becomes happy.'
- b. Her er en bok som [ingen] blir lykkelig [CP som leser].
here is a book that nobody becomes happy that reads
'Here is a book that nobody becomes happy who reads it.'
- c. Per slipper jeg ikke inn [noen [CP som liker]].
Per let I not in anybody that likes
'Peter, I didn't let in anybody who likes him.'
- d. Per slipper jeg ikke [noen] inn [CP som liker].
Per let I not anybody in that likes
'Peter, I didn't let anybody in who likes him.'
- e. *Per slipper jeg ikke [noen [CP som liker]] inn.
Per let I not anybody that likes in
'Peter, I didn't let anybody who likes him in.'

(Norwegian; Taraldsen 1981:486)

Although we will not offer a theory of why extraposition differs from other types of movement in terms of freezing effects, it should be clear that the Dinka facts accord what we see in other languages. Extraposition of CP is compatible with *wh*-movement of a phrase within it.

7.3 *The relation between C and vP*

Another aspect of our proposal that deserves further discussion is the implication that we may also expect to see reflexes of *wh*-agreement between phase heads with regard to move-

ment from Spec-*v*P to Spec-CP. In particular, *wh*-movement to Spec-CP should also require an Agree relation between C and *v*P.

In Dinka, this is not a problem, because the highest verb or auxiliary moves to C in every clause. If head movement is mediated by Agree, then, by transitivity, there is plausibly already an Agree relation between C and *v*P, as long as *v* is part of the complex head that moves to C. But we expect to find languages in which long-distance extraction requires a syntactic relation between an intermediate C and a *v*P from which extraction takes place.

Inversion in the context of *wh*-movement, in the Romance languages, for example (Torrego 1984; Rizzi 1991), may be an effect of this type. There appear to be a number of languages in which the verb undergoes additional movement in the context of a question. In the Romance languages, for example, many researchers have observed that fronted *wh*-arguments must be followed by the verb, so that subjects can no longer appear before the verb (e.g. Torrego 1984; Rizzi 1991). This is true in Spanish and Italian, for example (63a–d).

(63) *Spanish and Italian verb raises to C in the context of extraction:*

- a. *Qué María lee siempre?
what Maria reads always
'What does Maria always read?'
- b. Qué lee María siempre?
what reads Maria always
'What does Maria always read?'
(Spanish; Torrego 1984:104)
- c. *Che cosa Maria ha detto?
what Maria has said
'What has Maria said?'

- d. Che cosa ha detto Maria?
 what has said Maria
 ‘What has Maria said?’
 (Italian; Rizzi 1991)

As Torrego (1984) shows for Spanish, the same effects are seen in embedded clause when they are on the path of movement. In these clauses also, the subject must follow the verb (64a–b).

(64) *Verb also moves in embedded clauses:*

- a. Juan pensaba [que Pedro **le había dicho** [que la revista **había publicado**
 Juan thought that Pedro him had told that the
 ya el artículo]].
 journal had published already the article
 ‘Juan thought that Pedro had told him that the journal had already published
 the article.’
- b. Qué pensaba Juan [que **le había dicho** Pedro [que **había publicado** la
 what thought Juan that him had told Pedro that
 revista *t*]]?
 had published the journal
 ‘What did Juan think that Pedro had told him that the journal had published?’
 (Spanish; Torrego 1984:109)

Such patterns may reflect the Agree relation between C and *v*P that we posit, if we assume that Agree is a prerequisite for head movement.

Alternatively, we may imagine that all heads in an extended projection share features, like a categorial feature, or inflectional features. If so, we would not expect to see similar

effects between C and vP , as they would already stand in the requisite Agree relation. We leave this as a question for future research.

Conclusion

In this paper, we have shown that Dinka offers particularly compelling evidence for the idea that long-distance dependencies involve intermediate movement steps through the edge of every verb phrase and every clause (Chomsky 1986, 2000, 2001, 2008). In addition, Dinka provides support for the idea that long-distance dependencies require agreement between all phase heads on the path of movement (Rackowski and Richards 2005; Den Dikken 2009a, 2012a,b; Halpert 2012). The syntax of long-distance extraction then appears to involve both of these effects: phase impenetrability *and* successive Agree relations between phase heads. On the basis of this conclusion, we proposed a modification of Rackowski and Richards (2005), in which both of these components constrain long-distance dependencies and the role of agreement is not to void phasehood, but to allow a probe to access the phase edge.

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