

The conjoint-disjoint alternation and phonological phrasing in Bemba^{*}

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1. Introduction

Bemba is renowned as an example of a language with an extensive conjoint-disjoint alternation following earlier work in Sharman and Meeussen (1955) and Sharman (1956). The alternation is understood as the expression of complementary pairs of verb forms in particular tenses, differentiated by their distributional properties. Thus conjoint and disjoint forms are morphologically marked to distinguish their context of occurrence. Disjoint forms are generally able to occur finally in a main clause while conjoint forms are not. Associated with these distributional properties are interpretational properties revealing information structure although, as van der Wal (this volume) points out, these are properties that vary across different Bantu languages.

The goal of this paper is to present the conjoint-disjoint alternation (henceforth CJ-DJ alternation) as it manifests itself in Bemba (Northern and Copperbelt dialects) and to specifically evaluate whether the alternation is encoded by tone in Bemba. Apart from segmental morphological marking of the CJ-DJ alternation in particular tenses a significant number of other tenses show tone marking that distinguishes the context of occurrence of a verb form in the same way that the CJ-DJ alternation does. This raises the question whether such tone marking should be treated as encoding the alternation and if it is not why its distributional properties are so similar to the CJ-DJ alternation. The paper thus elaborates on the interplay between the CJ-DJ alternation, on the one hand, and prosodic marking, on the other. It will be shown that prosodic marking differs from the CJ-DJ alternation on only a limited number of properties but which, it will be argued, are significant enough to tip the balance towards segmental marking as the central way in which the CJ-DJ alternation is encoded in Bemba.

The paper is organised as follows: Section 2 provides background on Bemba tonology which is relevant for the ensuing discussion; section 3 presents the morphological segmental CJ-DJ alternation markers; section 4 looks at prosodic marking with the goal of evaluating whether tone-marking independently encodes the CJ-DJ alternation; section 5 looks at the interpretational properties of the CJ-DJ alternation and also to what extent these also coincide with prosodic marking; section 6 gives the final evaluation of prosodic marking of the CJ-DJ alternation in Bemba; section 7 offers a short discussion of phrasal phonology in nominal forms; and section 8 ends the paper with some concluding remarks.

2. Background: Basic Bemba tonology

In order to understand both the CJ-DJ alternation and prosodic marking in Bemba it is necessary to present some background on the basic tonal structure of Bemba which is further detailed in Bickmore & Kula (2013), Guthrie (1945), Kula & Bickmore (to appear) and Sharman & Meeussen (1955). These works should be consulted for more detailed discussion and additional examples.

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The verbal tonology of Bemba distinguishes between lexically H-toned and toneless verb roots typically resulting in minimal pairs such as *-lúk-* ‘weave’ vs. *-lúk-* ‘vomit’.¹ The tone-bearing unit (TBU) in Bemba is the mora with the following tonal structures attested: Cà, Càà, Cá, Cáá, CAA, *CÀá.

There are two main H tone spreading processes central to the tonology of Bemba; unbounded spreading and bounded spreading. Unbounded spreading spreads a H rightwards up to the end of the verb form, targeting all following toneless moras in a phrase-final word.² The examples in (1) show unbounded spreading in a verb form where the initial mora of the 3rd plural subject marker is lexically H-toned (1a-b) and the following future marker *-ka-* and verb are toneless.³ This contrasts with (1c) where the 1st plural subject marker is low-toned and the verb form therefore surfaces as all low.

- (1) a. bá-ká-lúk-á ‘They will weave’
 b. bá-ká-lóòndólól-á ‘They will explain’
 c. tù-kà-lòòndòlòl-à ‘We will explain’

Unbounded spreading contrasts with bounded spreading which does not spread a H to the end of the verb form. There are two contexts where bounded spreading applies. Examples in (2a-b) illustrate one of these – when the verb is followed by another constituent, here an adverb. Copperbelt and Northern Bemba (CB and NB, respectively, henceforth) differ with respect to the domain of bounded spreading which is ternary in CB and binary in NB. The examples in (2a-b) thus illustrate CB and only differ from (1a-b) in not having unbounded H spreading on the verb form. To show that this is not influenced by the tone of the following constituent both a low-toned adverb (2a) and one with an initial H (2b) are used. (2c) shows that there is no H spreading when the subject marker is low-toned.

- (2) a. bá-ká-lúk-à bwìinò ‘They will weave well’
 b. bá-ká-lóòndòlòl-à sáàná ‘They will explain a lot’
 c. tù-kà-lòòndòlòl-à bwìinò ‘We will explain well’

¹ Unless otherwise stated all reference to ‘Bemba’ assumes that the point holds for both Northern and Copperbelt Bemba dialects, otherwise each dialect is referred to specifically. Copperbelt Bemba data are drawn from speakers mainly based in Ndola. The following consultants, whose input is graciously acknowledged, have provided data on either dialect: Honoria Mutale, Bupe Kula, Moses Nkandu, Fr. Kabiti, Oscar Mukabila and Mukanu Kapalanga.

² The following abbreviations are used in the paper: H = high tone; TBU = tone bearing unit; TAM = tense aspect mood; HTD: high tone doubling; NB = Northern Bemba; CB = Copperbelt Bemba; MH = melodic high tone; OCP = obligatory contour principle; FV = final vowel; V2 = verb stem second vowel; SM = subject marker; OM = object marker; NP = Noun Phrase; VP = Verb Phrase; PL = plural; CAUS = causative; Q = question particle; HAB = habitual; COND = conditional; COMPL = complementizer; LOC = locative; DEM demonstrative; CONJ = conjunction; REFLX: reflexive; RCD = referential concord; IAV = immediate after verb; FUT = future; F1/2/3 refer to different futures; P1/2/3/4 refer to different pasts; and numbers on nominals indicate noun class markers.

³ In all examples high tone is marked by an acute accent and low tone with a grave accent. Underlying lexical high tone is underlined. 1st and 2nd person plural subject markers are toneless while all other SMs are H. The class 1 singular object marker is toneless while all other OMs are H. TAMs have specific tones as will be presented in ensuing discussion and like in most Bantu languages derivational suffixes are all toneless. Examples show the standard Bantu verb structure: (NEG)-SM-TAM-(OM)-VERB STEM-(TAM)/FV.

The other context where bounded spreading applies is when two Hs are separated by a number of toneless moras sufficient to allow bounded spreading. This is best illustrated by a preceding lexical H that is followed by a final H as provided by, for example, the lexically H-toned post-verbal enclitic =*kó*.⁴ Examples using the same toneless verbs and future marker as in (1) and (2) are given in (3).

- (3) a. *bá-ká-lóòndòlòl-à=kó* ‘They will also help to explain’
 b. *bá-ká-lúk-il-à=kó* ‘They will plait in there’
 c. *tù-kà-lóòndòlòl-à= kó* ‘We will also help to explain’

The lexical H of the subject marker in (3a-b) spreads in bounded fashion (ternary spread for CB) because of the following H on the final mora of the verb form, provided by the enclitic. As in the examples in (2) bounded spreading has a specified domain and does not continue to spread the H even when there are potential target toneless moras.

Bickmore and Kula (2013) propose that ternary spreading in CB is the result of two separate processes. The first is High Tone Doubling (HTD), which spreads a H to the following mora (whether that mora is in the same syllable or the next one). HTD is the only process that applies in bounded spreading in NB. By contrast in CB, HTD feeds a second process of Secondary HTD, which continues to spread the H to the first mora of the following syllable. The strongest evidence that these are separate processes is that the two processes are subject to different constraints. Of importance in the current discussion is that HTD applies even if it results in H adjacency with a following lexical H (an OCP violation), while Secondary HTD never allows such violations. Consider the CB examples below illustrating an OCP violation triggered by HTD and resulting in downstep (4a-b), in contrast to (4c) where Secondary High Doubling does not apply to avoid an OCP violation. (No downstep occurs between underlyingly adjacent Hs).

- (4) a. *bá-ká-[!]tú-lúk-á* ‘They will plait us (our hair)’
 b. *ú-kú-[!]léét-á* ‘To bring’
 c. *bá-ká-mù-lás-á* ‘They will hit him/her’

In (4a) the 3rd plural subject marker *bá-* and the 1st plural object marker *-tú-* are lexically H-toned. The H of the subject marker *bá-* undergoes HTD to the following toneless future marker *-ka-* despite the fact that there is a following lexical H which is therefore downstepped (indicated by superscript !). The same applies in the infinitive form in (4b) with a lexically H-toned verb. (4c) which includes a lexically H-toned verb and toneless 2nd plural object marker *-mu-* shows only HTD of the initial H onto the following future marker but further spread – Secondary HTD – is blocked as this would result in adjacency with the following lexical H of the H-toned verb. Thus HTD and Secondary HTD contrast with respect to their applicability in OCP contexts. In contrast to this HTD in NB is subject to the OCP and thus always avoids creating adjacent Hs. A second difference between the two processes is that HTD can spread a H onto a word-final TBU, but Secondary HTD cannot.

The final point to discuss in Bemba tonology is the range and use of Melodic Highs (MHs). As noted in Odden & Bickmore (to appear) MHs are specific tones or

⁴ The enclitic =*kó* is a class 17 locative enclitic on the verb that can assume a number of other interpretations on which see Marten and Kula (2014) for discussion. In terms of prosodic structure the enclitic is part of the same prosodic word as its host.

tone patterns that are assigned to verb forms based on different properties such as the tone of TAMs, subject markers, roots, presence of object markers or differences between verbal and nominal forms. In Bemba MHs contrast TAMs according to where the MH docks (Bickmore & Kula (2013): (i) on the final vowel (FV); (ii) on the second vowel of the stem (V2); or (iii) on the domain from V2 to the FV. A fourth set of TAMs have no MH. These tones are treated as MHs because they cannot be readily explained by tone spreading rules as discussed above and they occur similarly in both H and low toned verbs as long as the TAM requirement is met. The crucial point for the current discussion is that these MHs interact with the tonal processes discussed above. Consider the MH patterns exemplified in (5) below. MHs like lexical Hs are underlined.

(5) MH patterns in Bemba

(i) TAMs with no MH:

Infinitive, Future (/ka-/), Habitual (/la-/), Progressive (/lée-/), Past Progressive (/a-lée-/), Desiderative 1 (/ka-lée/), Nearer Past (/á-cí-/), Immediate Future (/á-láa/), Continuous (/á-cí-láa/), Future Continuous (/ka-láa/), Imperative 2 (á-lii-), Hypothetical Continuous (preverbal /a-/), /láa-/), Desiderative 2 (/leé-/)

- | | | | |
|----|--------------|-------------------|---------------|
| a. | tù-kà-pàt-à | ‘We will hate’ | (Future) |
| b. | tù-là-pàt-à | ‘We usually hate’ | (Habitual) |
| c. | tù-léé-pát-á | ‘We are hating’ | (Progressive) |

In (5a-b) with no MH the verb form surfaces as toneless. (5c) with a H on the progressive marker *-léé-* shows unbounded spreading to the end of the verb form. In this case surface Hs can be accounted for by rightward H spreading.

(ii) TAMs with a MH on the FV:

Imperative (with a H-toned Root and no OM), Subjunctive (without an OM), and the Negative Perfective.

- | | | | |
|----|--|--------------------|-----------------------|
| d. | pàt-á | ‘Hate!’ | (Imperative) |
| e. | tù-bé <u>l</u> éèng-é | ‘We should read’ | (Subjunctive) |
| f. | tà-tú- ¹ bé <u>l</u> ééng-èlé | ‘We have not read’ | (Negative Perfective) |

In (5d) the low-toned verb *-pàt-* surfaces with a final H without any local source and is as such accounted for as a final MH. In (5e) the presence of the final MH blocks unbounded spreading of the verb root H so that only HTD occurs. As a CB form Secondary HTD does not apply to avoid an OCP violation. In (5f) the negative prefix *ta-* is associated with a floating H that docks rightwards to the following subject marker resulting in downstep on the following lexical H of the verb root.⁵ The verb root H shows bounded spreading involving Secondary HTD because of the following final MH. In both (5e-f) the final H cannot plausibly be derived from the preceding H and is therefore treated as a MH.

⁵ An alternative analysis would be to treat the negative *ta-* as lexically H-toned with the property of shifting its H to the following mora. In (5f) the vowel of *ta-* is underlined as the lexical bearer or trigger of the following H.

- (iii) TAMs with a MH on V2 to the FV:
 Perfective (/i-ile/), ‘already’ Past (/a-, -a/), Subjunctive (with OM), Imperative (with OM), Remote Past (/a-, ile/), Imperative 1 (pre-verbal /náa-/), Hypothetical (pre-verbal /a-/)

- g. *tù-lòndólw-ééélé* ‘We have introduced’ (Perfective)
 h. *tù-mù-lòndólól-é* ‘We should introduce him’ (Subjunctive w/OM)
 i. *tw-àà-lòndólw-ééélé* ‘We introduced/explained’ (Remote Past)

In all the forms in (5g-i) the verb, subject marker, object marker and TAM are lexically low-toned and thus cannot be the source of the MH that docks onto V2 to the FV.

- (iv) TAMs with a MH on V2:
 The Imperative with a toneless root and no OM.

- j. *lòndólwèèl-à* ‘Explain to x’ (Imperative w/o OM)

(5j) similarly involves a low-toned verb which surfaces with a MH on V2 in the imperative without any local source for the H.

To sum up, we have seen that there are two productive H spreading processes in Bemba. Unbounded spreading spreads the rightmost H in a phrase-final word to any following toneless mora until the final mora. Bounded spreading, which can be either binary (NB) or ternary (CB), affects all other Hs, i.e. any H which is not the rightmost one in the word, and any H in a non phrase-final word. These processes are completely productive, applying to root Hs of both verbs and nouns, as well as to verbal or nominal prefixes. Nominals will be discussed in section 7. Finally we saw that these processes interact with MHs associated with particular TAMs and of which there are three docking patterns identified in Bemba.

With this background on Bemba tonology let us begin to consider the formal properties of the CJ-DJ alternation by looking at the TAM system of Bemba in order to identify which tenses contrast CJ-DJ forms in Bemba.

3. Segmental morphological markers of the CJ-DJ alternation

As in other Bantu languages the CJ-DJ alternation in Bemba is encoded by segmental markers in at least some of the tenses where the contrast is expressed. Table 1 is a partial Bemba TAM system adapted from Nurse (2008) with some modifications based on fieldwork data in both NB and CB areas. Table 1 shows CJ-DJ forms only in those TAMs that mark the alternation segmentally. The table shows, in the vertical column, four pasts, a general present marked as ‘zero’ tense, and three future forms, which are contrasted in a horizontal row for perfective, imperfective (progressive), persistive and anterior (referred to as perfect in other works). Each cell indicates an initial which occurs in the TAM position in the verb template and a final that occurs in the FV position. The anterior form of the general present has a preverbal TAM in addition. In persistive forms a subject marker (SM) occurs between the persistive marker *-cili-* and the rest of the TAM marker. Persistives therefore have two SMs

with *-cili-* ‘still’ acting as an auxiliary or deficient verb (Doke 1954).⁶ The final line in each cell starting with *ta-* gives the negative form. When the *ta-* is underlined it reflects that it is associated with a H that shifts to the following mora.

	PERFECTIVE	IMPERFECTIVE	PERSISTIVE	ANTERIOR
Remote Past (P4) (timed)	CJ: -a- -ile DJ: -alí- -ile <u>ta-</u> -a- -ile	-alée- -a <u>ta-</u> -alée -a	-áci- <u>li</u> -SM-alee- -a	-a- -a -alí- -a <u>ta-</u> -a- -a
Recent Past (P3)	CJ: -á- -ile DJ: -áli- -a <u>ta-</u> -a- -ile	-alée- -a <u>ta-</u> -alée -a	-áci- <u>li</u> -SM-álee- -a	
Earlier today Past (P2)	-áci- -a <u>ta-</u> -áci- -a	-á <i>ci</i> l <i>á</i> a- -a <u>ta-</u> -á <i>ci</i> l <i>á</i> a- -a	-áci- <u>li</u> -SM-aci <i>la</i> a- -a	
Immediate Past (P1)	CJ: -á- -a DJ: -áa- -a			
Zero	CJ: -Ø- -a DJ: -la- -a <u>ta-</u> -Ø- -a	-lée- -a <u>ta-</u> -leé- -a	CJ: -c <i>il</i> i-SM-Ø- -a DJ: -c <i>il</i> i-SM-la- -a	CJ: -Ø- -ile DJ: náa--Ø- -a <u>ta-</u> -a- -a <u>ta-</u> -Ø- -ile
Immediate Future (F1)	CJ: -á- -a DJ: -áa- -a -áláa--a <u>ta-</u> -aá- -e	-á <i>ku</i> l <i>á</i> a- -a <u>ta-</u> -aá- -e	-c <i>il</i> i-SM-akuláa- -a	
Later today Future (F2)	-lée- -a <u>ta-</u> -aa- -e			
After today Future (F3)	-ka- -a <u>ta-</u> -aka- -e	-ka <i>l</i> áa- -a <u>ta-</u> -akalée -a	-c <i>il</i> i-SM-ka <i>l</i> áa- -a	

Table 1: Bemba TAMs (adapted from Nurse 2008)

The full set of segmental CJ-DJ markers which occur in affirmative tenses is given in Table 2. The present/habitual, perfective and perfect (anterior) are tenses which frequently occur amongst tenses expressing the CJ-DJ also in other Bantu languages (see e.g., Ha (Harjula 2004), Kirundi (Meeussen 1959), Makhuwa (van de Wal 2009), Tswana (Creissels 1996), Zulu (Doke 1947)). In fact Hyman & Watters (1984) point out that the CJ-DJ alternation arises in unmarked TAMs (that lack intrinsic focus), hence it’s occurrence in the habitual and past completive. In each case in Bemba the two forms can always be unambiguously distinguished (though see discussion of P1 below) with the disjoint form having more segments in the prefix than the conjoint form. Thus, for example, in the present/habitual the conjoint has no overt marker (6a) while the disjoint is marked by *-la-* (6b). In the perfective P4 the conjoint form is marked by the prefix *-a-* (6c) while the disjoint form is marked by *-alí-* (6d). These are illustrated in (6) using a low-toned verb. As noted earlier conjoint forms are used when the verb is not final in a main clause while disjoint forms are used when the verb occurs main clause-finally. We refine the distributional properties involved in later discussion.

⁶ See Nichols (2010) for some discussion of the persistive. The more complex TAMs in table 1 include further morphological breakdown which is not shown here for brevity.

- (6) a. tù-lòndòlòl-à lyòònsé ‘We explain all the time’ CJ
 b. tù-là-lòndòlòl-à ‘We (usually) explain’ DJ
 c. bá-á-lóndólwéélé *x* ‘They explained *x*’ CJ (MH_{V2-FV})
 d. bá-á¹lí-lóndólwéélé ‘They explained’ DJ (MH_{V2-FV})

	PRESENT/ HABITUAL	P1/F1 (PERFECTIVE)	P3 (PERFECTIVE)	P4 (PERFECTIVE)	P4 (ANTERIOR)	ZERO (ANTERIOR)
CONJOINT	-Ø- -a	-á- -a	-á- -ile	-a- -ile	-a- -a	-Ø- -ile
DISJOINT	-la- -a	-áa- -a	-álii- -a	-alí- -ile	-alí- -a	náa--Ø- -a

Table 2: Segmental markers of the CJ-DJ in Bemba

Examples (6a-b) contrast the CJ-DJ alternation in the present/habitual with the disjoint form marked by *-la-* with no tonal contrast in the verb form since the verb is low-toned. In (6c-d) the verb stem is identical between the conjoint and the disjoint forms with both having the V2-FV MH. The surface tone patterns follow from regular tone rules as discussed in section 2. Thus in (6c-d) where both P4 forms are associated with the V2-FV MH the preceding H cannot undergo unbounded spreading. It is ternary in (6c) and binary in (6d). The CJ-DJ marking is therefore carried by the segmentally different prefixes for the conjoint and disjoint forms.

Of the segmentally marked CJ-DJ forms given in Table 2 above the present/habitual, the P4 perfective and anterior, and the zero anterior forms all behave predictably with respect to their tone patterns which follow from the tonal patterns discussed in section 2. The P1/F1 and the P3 forms, however, deserve some discussion.

For P1/F1 the difference between the conjoint and the disjoint forms is in the pre-radical prefix with the conjoint as */-á-/* and the disjoint as */-áa-/*. This contrast is neutralized on the surface by vowel fusion of the CJ-DJ marker with the vowel of the preceding subject or tense markers. The result is that on the surface the CJ-DJ forms are segmentally identical as in (7) for the disjoint forms compared to (8) for the conjoint. They however show surface tonal differences which betray their contrasting underlying forms. (Underlying forms are here given on the right hand side of the surface form to illustrate the underlying segmental differences).

- (7) P1 Disjoint forms UR Gloss
 a. bá-á-lúk-á /bá-áa-luk-a/ ‘They have just woven’
 b. bá-á-¹léét-á /bá-áa-léet-a/ ‘They have just brought’
 c. bá-á-mù-lás-á /bá-áa-mu-lás-a/ ‘They have just hit him/her’
 d. tw-áá-¹lás-á /tu-áa-lás-a/ ‘We have just hit’
- (8) P1 Conjoint forms UR Gloss
 a. bá-á-lúk-à ... /bá-á-luk-a/ ‘They have just woven *x*’
 b. bá-á-léét-à ... /bá-á-léet-a/ ‘They have just brought *x*’
 c. bá-á-mú-¹lás-á ... /bá-á-mu-lás-a/ ‘They have just hit him/her *x*’
 d. tw-áá-lás-á... /tu-á-lás-a/ ‘We have just hit *x*’

Although the above CJ-DJ forms are segmentally identical but tonally distinct, the differences in tone result directly from the indicated underlying vowel length contrast. This means that (7-8) do not provide examples of tonally marked CJ-DJ and are categorized as part of segmentally marked CJ-DJ. The difference in the stem tone

pattern of the CJ and DJ forms is minimal and due entirely to unbounded H spreading in the DJ forms versus bounded spreading in the CJ forms.

In (7a-b) the rightmost H shows unbounded spreading that spreads the rightmost H to the end of the verb form. (7b) has a downstep on the root H because of spreading onto the second mora of the long disjoint prefix. In (7c) the H on the disjoint marker undergoes HTD (onto the second mora of the disjoint marker) but not Secondary HTD (onto the object marker) as this would result in an OCP violation. Finally in (7d), after the H on the disjoint prefix undergoes HTD, a tautosyllabic LHH contour is created on the initial syllable. This resolves to a level H, as rising tones are prohibited in Bemba. In the conjoint forms in (8a-b) we see bounded spreading due to a following constituent so that in this case the final TBU is low contra (7a-b). In (8b) we see no downstep, in contrast to (7b), because here the Hs are underlyingly adjacent and not derived. In (8c) HTD (onto the object marker) results in an OCP violation and downstep of the verb root H. Finally in (8d), the simple LH contour present on the first syllable is resolved to a level low tone, again to avoid a rising tone.

The final case of segmentally marked CJ-DJ to consider is P3. In this case the segmental contrast marking the CJ-DJ forms is being lost due to an ongoing loss of the P3 conjoint form in both Northern and Copperbelt Bemba (see Kula 2014 for discussion). Thus current usage shows that only the (formerly) disjoint form is used to mark both forms of the CJ-DJ pair i.e. implying that there is no longer any segmental contrast in P3. There is however a contrast in tone with the disjoint form showing unbounded H spread, since it occurs at the end of a phrase, in contrast to the conjoint with bounded spreading. The question is whether such tonal marking can be considered to encode the CJ-DJ alternation. We pursue this question in the next section. On the loss of the segmental P3 conjoint marker one of the motivations for the loss is tonal neutralization between the P3 and P4 conjoint forms which only differ in the tone of the initial (see Table 1). In terms of semantics the extended P3 disjoint form retains the recent past interpretation in contrast to the remote past. This implies that P3 must now be characterised with those TAMs that have no segmental encoding of the CJ-DJ alternation, discussed in section 4 below. There are therefore 5 TAMs which express a segmental CJ-DJ alternation in Bemba, including P1 where the segmental contrast can only be seen underlying. The tonal patterns seen in these cases follow from regular tone rules and therefore do not provide motivation for considering the tone patterns as encoding the CJ-DJ alternation.

4. Prosodic marking: Does tone encode the CJ-DJ alternation?

The preceding discussion has identified TAMs where the CJ-DJ alternation is encoded by segmental morphemes differing according to the TAM involved. The question now is whether the alternation is encoded by tone in those TAMs where it is not segmentally marked in Bemba. With respect to tonally encoded CJ-DJ Creissels (1996, 2012) demonstrates for Tswana that the tone marking involved in the CJ-DJ alternation in this language cannot be derived from regular tone rules and that a particular tone pattern may in fact alternate between marking the conjoint form in one case and the disjoint form in another. Thus in Tswana different tone patterns are used to mark the alternation in different TAMs, just like different segmental morphemes are used. Creissels (1996) uses the inability to derive the tone of CJ-DJ forms from regular tone rules as indicative of the independence of the CJ-DJ alternation as a property of tense systems and not something that can be derived by phonological rules/constraints. If we adopt Creissels argumentation that the tone of tonally marked CJ-DJ should not

follow from regular tone rules, then what needs to be established is whether there are cases of tonally marked CJ-DJ in Bemba that are not predictable i.e. which do not follow from the rules presented in section 2.

Following Kula & Bickmore (to appear) the earlier established processes of bounded and unbounded spreading are here used as diagnostics for phonological phrasing with unbounded spreading indicating an immediately following right edge of a phonological phrase and bounded spreading showing the absence of such a phonological phrase boundary after the verb. In Kula and Bickmore (to appear) it is shown that in the phonology-syntax mapping right edges of phonological phrases correspond to the right edges of syntactic maximal projections. Phonological phrasing therefore provides information on syntactic constituency. Thus, unbounded spreading is attested not only when a word is pre-pausal but also in a phrase-internal word, when a maximal projection immediately follows that word. Similarly, bounded spreading applies when there is no phonological phrase boundary between two words or the two words belong to the same maximal projection. Examples (9-11) show unbounded or bounded spreading on the verb in different syntactic contexts with parentheses indicating phonological phrase boundaries. Consider example (9) below showing a subject-verb structure where the subject is unambiguously in a separate maximal projection (NP) from the verb (VP).

- (9) (Subject) (Verb)
- a. (ɪmbáɫámínwé) (shí-ká-sáɫáángán-á)
 9ring 10SM-FUT3-unorder-FV
 ‘The rings will be unordered’
- b. (àbáɫímí) (bá-ká-lóóndólól-á)
 2farmer 2SM-FUT3-explain-FV
 ‘The farmers will explain’

In (9a-b) the subject and following verb belong to separate phonological phrases (p-phrases henceforth) indicated by unbounded H spreading both on the noun and the verb. In ease case the initial H spreads in unbounded fashion to indicate that there is a p-phrase boundary immediately following. (10) below shows the phrasing between a verb and following objects when there is no object-marking on the verb.

- (10) (Verb Object) (Object)
- a. (ùkú-shíik-il-à ìmpéɫéémbé) (íffíntú)
 15-bury-APPL-FV 9antelope 8thing
 ‘To bury the things for the antelope’
- b. (bá-ká-shíik-il-à ùmúlímí) (Búúpè)
 2SM-FUT3-bury-APPL-FV 1farmer 1Bupe
 ‘They will bury Bupe for the farmer’

In (10a-b) the verb has bounded H spreading showing that the following object is part of the same p-phrase as the verb, with a p-phrase boundary following the first object indicated by unbounded H spreading on the object. The second object phrases separately and also shows unbounded spreading of its rightmost H. The examples in (11) show complementary data where a following object is object-marked on the verb.

- (11) (Verb with OM) (Object)/(Adverb)
- a. (bá-ká-mú-shíik-íl-á) (Chítúúndú)
 2SM-FUT3-1OM-bury-APPL-FV 1Chitundu
 ‘They will bury for Chitundu’
- b. (bá-ká-mú-shíik-íl-á) (Chítúúndú) (bwíínó)
 2SM-FUT3-1om-bury-APPL-FV 1Chitundu well
 ‘They will bury for Chitundu well’
- c. (bá-ká-mú-shíik-íl-à bwíìnò) (Chítúúndú)
 2SM-FUT3-1OM-bury-APPL-FV well 1Chitundu
 ‘They will bury for Chitundu well’

(11a) shows that a co-referential object is phrased separately from the verb with the verb showing unbounded H spreading and therefore a following p-phrase boundary. (11b) illustrates an object-marked verb with a following object and adverb. With this order the verb phrases separately from the object as in (11a) and predictably shows unbounded H spreading. In (11c), by contrast, when the adverb precedes the object, it is phrased together with the verb and the verb shows bounded spreading. The object follows in a separate p-phrase. These examples thus illustrate that unbounded and bounded H spreading are completely productive and directly correlate with phonological phrasing which mirrors syntactic structure.

Based on the above distribution the following sub-sections look at phonological phrasing in segmentally marked CJ-DJ on the one hand and on the other hand evaluates whether tenses without segmentally marked CJ-DJ show tonal patterns that would motivate tonally encoded CJ-DJ. If it turns out that the tone patterns found in these cases are not independent of the regular tone rules discussed then we can conclude that tone does not encode the CJ-DJ alternation in Bemba. The discussion on this focuses more specifically on CB but it is assumed that the analysis presented also holds for NB adjusted for differences in bounded spreading. The choice of one dialect is here made simply for ease and clarity of exposition.

4.1 Phonological phrasing in segmentally marked CJ-DJ alternation

This section briefly looks at whether segmentally marked CJ-DJ forms are subject to the phonological phrasing rules discussed above. Examples of segmentally marked CJ-DJ forms were presented in section 3. (12-13) present examples of p-phrasing in these contexts. | indicates phonological phrase boundaries through out.

- (12) a. bá-lóóndólól-à lyòònsè | ‘They explain all the time’ CJ
 b. bá-lá-lóóndólól-á | ‘They explain’ DJ
 c. bá-lá-lóóndólól-á | sààná ‘They explain a lot’ DJ

The examples in (12) are from the present/habitual with (12a) showing the conjoint form which has no overt marker. In this case the verb form shows bounded spreading indicating that there is no immediate following phonological phrase boundary. (12b-c) are disjoint forms marked by *-la-* and in this case we see unbounded H spreading of the subject marker H to the end of the verb form, indicating a following phonological phrase boundary. Thus both in contexts where the disjoint form is final or not there is a following phonological phrase boundary. The associated interpretational properties are discussed in section 5. Since the tonal spreading patterns coincide exactly with the CJ-DJ alternation this might suggest that tone also encodes the alternation although in

this case we would have to say that it was doubly marked. Since the CJ-DJ alternation is only attested in main clauses let us consider phonological phrasing in verb forms of embedded clauses. If the two tone patterns encode the CJ-DJ alternation then they should not occur in embedded clauses like relative clauses in (13). Only phonological phrasing following the verb is indicated.

- (13) a. abáántú abá-lóóndólól-á | ‘(I like) people who explain’
 b. abáántú abá-lóóndòlòl-à lyòònsè | ‘(I like) people who always explain’
 c. útùbáántú tù-á-lóóndólól-á |
 ‘(These are) the people who have just explained (P1)’
 d. útùbáántú tù-á-lóóndòlòl-à bwìinò |
 ‘(These are) the people who have just explained well (P1)’

(13a-b) are in the present/habitual and (13c-d) are P1 forms, both TAMs which otherwise contrast CJ-DJ forms (segmentally). In both pairs of examples unbounded H spreading applies when the verb form is phonological phrase final while bounded spreading applies when the verb form is non-phrase final. This aligns well with a treatment of the H spreading patterns as not encoding the CJ-DJ alternation but rather indicating phonological phrasing across the board. Note that the morphology in these non-contrasting forms is identical to the conjoint form of these tenses. I assume that these do not indicate conjoint forms since there is no alternation in these cases. Let us now consider TAMs without segmental marking of the CJ-DJ alternation to evaluate whether tone can be seen to encode the alternation there.

4.2 Tonal marking & phonological phrasing in non-contrasting TAMs

TAMs with no segmental contrast of the CJ-DJ alternation in Bemba nevertheless show surface tonal contrasts. These cases are examined to demonstrate that the attested tonal differences can in fact be explained from the regular tonal processes of the language and therefore further weaken the case for a tonally encoded CJ-DJ alternation in Bemba. Let us first consider forms without MHs and then consider those with MHs in order to establish how both types of forms follow from regular tone rules.

4.2.1 Forms without Melodic Highs

Let us begin by examining tenses without MHs and no underlying difference in TAM marking to evaluate whether their surface tones can be explained in a regular way. This includes all the futures, all progressive forms and the pasts P2 and P3 (see table 1). Consider the case of the future F3 in the examples given in (14) below. (*bwìinò* ‘well’ that follows all non phrase-final verb forms is not given in the gloss. ‘Phrase’ in all examples and following discussion refers to phonological phrase).

(14) Future F3	Phrase-final form	Non phrase-final form	Gloss
a.	tù-kà-lùk-à	tù-kà-lùk-à bwìinò	‘We will weave’
b.	tù-kà-lás-á	tù-kà-lás-á bwíinó	‘We will hit’
c.	tù-kà-lásh-il-án-á	tù-kà-lásh-il-án-à bwìinò	‘We will hit for e.o.’
d.	bá-ká-lúk-il-án-á	bá-ká-lúk-il-án-à bwìinò	‘They’ll weave for e.o.’
e.	bá-ká-mú-pát-á	bá-ká-mú-pát-à bwìinò	‘They will hate him’
f.	bá-ká- ^l lásh-il-á	bá-ká- ^l lásh-il-à bwìinò	‘They will hit for’

As can be seen, the pairs of verb forms are segmentally identical, but in most cases are tonally different. With a low-toned subject marker in (14a-c) the verb forms are identical in (14a) where there is no H in the whole verb form. The verb forms are also identical in (14b) with a high-toned verb if the verb only has two moras because the H in the non phrase-final form spreads one to the right via HTD. This H undergoes Inter-word HTD spreading onto the initial mora of the following word followed by unbounded H spreading (see Kula & Bickmore, to appear, for discussion). If suffixes are added in (14c) then the difference between the pair of verb forms emerges because bounded spreading can surface in the non phrase-final form. With a high-toned subject marker in (14d-f) we generally get a difference between the verb forms. In (14d) with a low-toned verb the unbounded-bounded H spreading contrast is easily expressed. The same holds for (14e) with an object marker. (14f) with a high-toned verb also retains the tonal contrast with downstep in both forms as long as there are sufficient morae after the verb root to express bounded spreading in the non phrase-final verb form. In all cases here a rightmost H (where present) undergoes unbounded spreading in phrase-final forms. Conversely, non phrase-final forms show bounded spreading of the same H because another word follows in the same p-phrase.

The tone patterns seen in the future in (14) obtain in all TAMs without a MH as illustrated by some selected examples below from the infinitive, progressive, immediate future (F1), progressive recent past (P2), progressive far future (F3) and the intermediate past (P3). (X represents a following constituent like *bwìnò* ‘well’)

(15) Phrase-final form	Non phrase-final form	Gloss
a. <u>ù</u> -kú-lóondólól-á	<u>ù</u> -kú-lòndòlòl-à X	‘To explain’
b. <u>tù</u> -l ^é é-lóondólól-á	tù-l ^é é-lòndòlòl-à X	‘We are explaining’
c. <u>bá</u> -á-láá-lóondólól-á	bá-á-láá-lòndòlòl-à X	‘They will explain (F1)’
d. <u>bá</u> -á-cí-láá-lóondólól-á	bá-á-cí-láá-lòndòlòl-à X	‘They were explaining (P2)’
e. <u>tù</u> -káláá-lóondólól-á	tù-káláá-lòndòlòl-à X	‘We will be explaining (F3)’
f. <u>tù</u> -à-líí-lóondólól-á	tù-à-líí-lòndòlòl-à X	‘We explained (P3)’

In these cases, as in (14), the pairs of forms are distinguished by patterns of unbounded versus bounded H spreading and pattern exactly as predicted by the tone rules. In the infinitive (15a) the H on the augment shifts to the next syllable and in (15f) a rise is avoided by shifting the initial H of the TAM to the next syllable. All patterns are explained by the foregoing discussion, namely that phrase-final forms show unbounded H spreading and non phrase-final forms show bounded spreading serving to indicate phonological phrasing. The tone patterns are therefore not unique from nor independent of p-phrasing tone patterns.

4.2.2 Forms with Melodic Highs

As noted in section 2 above certain TAMs have a MH tone associated with the verb stem of which 3 different MHs have been identified in Bemba; one that docks onto the FV; one that docks onto V2 to the final; and one that docks onto V2. The following discussion considers the role of MHs in the tonal patterns of segmentally non-contrasting TAMs. The question is whether verb forms with MHs show tonal differences in phrase-medial vs. phrase-final positions and if so whether such differences cannot be explained by the regular tone rules discussed.

In (16) below the MH docks onto the FV in the negative perfective (16a-b) and the subjunctive (without OM) in (16c-d). The negative marker *ta-* in (16a-b) is associated with a floating H that surfaces on the following syllable, as noted earlier.

- (16) Forms with FV MH
- | | |
|--|----------------------------------|
| a. <u>tà-tú-lóóndólwèèlé</u> | ‘We haven’t explained’ |
| b. <u>tà-tú-lóóndólwèèlé</u> Chítúúndú | ‘We haven’t introduced Chitundu’ |
| c. <u>bá-lóóndólòl-é</u> | ‘They should explain’ |
| d. <u>bá-lóóndólòl-é</u> Chítúúndú | ‘They should introduce Chitundu’ |

As can be seen, the verb surfaces tonally (and segmentally) identically in the phrase-final and the non phrase-final pairs in (16a-b) and (16c-d). In this case the phrase-final forms (16a,c) do not show the expected unbounded spreading because there is a H on the final and therefore bounded spreading must apply instead. Recall from earlier discussion that bounded spreading occurs in two contexts; when there is a following constituent that belongs to the same p-phrase as the verb or when there is another H following within the verb. The latter being a purely phonological constraint on the occurrence of unbounded spreading. In this sense the unexpected bounded spreading pattern of the phrase-final forms can be explained on phonological grounds; unbounded spreading cannot occur in this case because a H follows. Essentially, the MH on the final is now the rightmost H in the verb and being on the final mora of the verb form, cannot spread further in a phrase-final form with no following constituent. In the non phrase-final forms in (16b,d) the verb form final H can spread to the following word (inter-word HTD and unbounded spreading) if it is toneless as in these cases.

There is thus no tonal contrast between the forms meaning that if tone was treated as encoding the CJ-DJ alternation then the contrast would not surface in all cases involving MHs. In this vein Sharman (1956) treats TAMs with MHs as the only tenses showing no CJ-DJ alternation in Bemba. The preceding discussion provides an explanation for this observation – a contrast cannot surface because both forms have a MH that blocks unbounded H spreading in phrase-final forms so that they are identical to their counterpart non phrase-final forms.

(17) below shows examples where the MH docks onto V2 and all subsequent TBUs of the verb form. In this case, as in (16) above, there is no tonal distinction between the phrase-final and non phrase-final forms. (17a-b) illustrate the negative remote past (P4) and (17c-d) the present anterior.

- (17) Forms with V2-FV MH
- | | |
|--|---------------------------------|
| a. <u>tà-tú-á-lóó¹ndólwéé¹lé</u> | ‘We did not explain’ |
| b. <u>tà-tú-á-lóó¹ndólwéé¹lé</u> fyòònsé | ‘We did not explain everything’ |
| c. <u>náá-tú-lòòndólól-á</u> | ‘We have explained’ |
| d. <u>náá-tú-lòòndólól-á</u> fyòònsé | ‘We explained everything’ |

In the two TAMs in (17a-b) and (17c-d) above the MH docks onto V2 and all subsequent TBUs of the verb form. The phrase-final form tonally patterns with the non phrase-final form because the MH blocks unbounded H spreading as discussed above.

From the foregoing discussion we can see that segmentally non-contrasting TAMs with MHs provide no support for a tonally encoded CJ-DJ alternation because in these cases there is no overt difference between verb forms used in either phrase-final or non phrase-final contexts. We must conclude that in these cases the CJ-DJ alternation is not marked. This then leaves us with segmentally non-contrasting TAMs without MHs. In these cases the pairs of forms do surface as tonally different, although in contrast to tonally encoded CJ-DJ in other languages like Tswana, the tone

patterns are highly predictable and consistent across different TAMs. In each case phrase-final forms show unbounded H spreading while non phrase-final forms show bounded H spreading. The questions that remain are whether these tone patterns play the dual role of both encoding the CJ-DJ alternation and phonological phrasing, or whether phonological phrasing itself encodes the CJ-DJ alternation. Before tackling these questions further let us consider the interpretational properties of the CJ-DJ alternation in Bemba as a second set of properties complementing the formal properties discussed thus far.

5. Interpretational properties of the CJ-DJ alternation in Bemba

As in a number of Bantu languages the CJ-DJ alternation correlates with information structure in different predictable ways in Bemba. Conjoint forms are associated with term focus of the constituent following the verb which shows either new information or contrastive focus. I take contrastive focus to involve selection from a set of alternatives (following Lambrecht 1994) even in cases where the alternatives are not overtly specified but only understood by the interlocutors. Conjoint forms therefore involve IAV focus on which see Buell (2006), Hyman & Watters (1984), van der Wal (2006), Watters (1979), among others, for some discussion. Disjoint forms involve verb focus (new information, corrective or truth value). The main contrasting feature between the two forms, as Hyman & Watters (1984) point out and as following discussion will show, is whether the verb is included in the focus or not – disjoint forms always include the verb in the focus.⁷ In view of trying to evaluate whether p-phrasing via tone marking independently encodes the CJ-DJ alternation the information structure of non-contrasting TAMs will also be considered in comparison to (segmentally marked) CJ-DJ forms. Consider the examples below contrasting the information structure of conjoint versus disjoint forms drawn from Sharman (1956: 40). (Emphasis in original, morphological glosses added.)

- (18) a. Bushé mu-la-peep-a? DJ
 Q 3PL-HAB.DJ-smoke-FV
 ‘Do you smoke?’
- b. Ee tu-peep-a sekeléeti CJ
 Yes 2PL-smoke-FV cigarettes
 ‘Yes, we smoke cigarettes. (i.e. we smoke *cigarettes*, and not a pipe)’
- (19) a. Nga mu-a-tób-á | úmutóndó bá-lée-is-a fúlw-á DJ
 COND 3PL-F1-break-FV 3pot 2SM-F2-come-FV be-upset-FV
 ‘If you *break* the pot they will be angry’
- b. Nga mu-a-tób-a úmutóndó | tu-ákuláá-tápi-l-á múnsupa CJ
 COND 3PL-F1-break-FV 3pot 2PL-COMPL-draw-FV 18LOC.calabash
 ‘If you break the pot we shall (have to) use the calabash for drawing water’

⁷ Sharman (1956: 30) makes the same point if we treat his “emphasis” as focus: ‘All ... [conjoint forms] throw emphasis (if any) on what follows the verb, or, more precisely are strongly linked to what follows (and formally therefore *cannot* stand at the end of a sentence). All ... [disjoint forms] throw emphasis on the verb itself, or more precisely, have only a weak link with what follows (and formally therefore may stand in mid-sentence, or at sentence-end).’ (Emphasis in original; parts in square brackets added).

In the question in (18a) where the verb is final the disjoint form marked by *-la-* is used. In the answer (18b) the verb is in the conjoint form and the object following the verb is focused contrastively with the meaning ‘Yes, and what we smoke is cigarettes, not anything else’. If the answer was a simple affirmation then the disjoint form ‘*ee, tu-la-peepa* ‘yes we smoke’” would be used. (18) is an example of segmentally marked CJ-DJ in the present/habitual. (19) is an example of a non-contrasting TAM but where we see differences in the tone of the verb form indicating p-phrasing. The verb in (19a) is identified as the phrase-final form, even though the verb has following constituents, because of unbounded H spreading on the root *tób-* ‘break’ where the lexical H spreads to the final vowel. What is important or in focus in this case is the breaking event about which the owner of the pot will be upset. There is also the possibility that the object following the verb is part of the focus but in either case the verb is part of the focus. The verb form of (19b) differs from (19a) in that the H of the verb root *tób-* does not spread to the final vowel i.e. it undergoes bounded H spreading because it is non phrase-final with a p-phrase boundary following the object. In this case the following constituent ‘pot’ is in focus and is interpreted as contrastively focused with the alternative water drawing utensil provided. (19) thus shows that phonological phrasing also correlates with information structure – focus is borne by a constituent that is final in a phonological phrase.

Given the information structure of CJ-DJ forms as discussed above we predict that the presence of object marking on the verb should imply that the verb appears in the disjoint form since a following co-referential object cannot be focused. Conversely we expect question words which are inherently focused to occur following conjoint verb forms which signal a following constituent as focused. Both these predictions are borne out in the data in (20-21) below.

- (20) a. *tù-là-mù-sààmbilish-à* (Chisanga) DJ
 2PLSM-HAB.DJ-1OM-teach.CAUS-FV (Chisanga)
 ‘We teach him (Chisanga)’
- b. *bá-mú-sààmbilish-à* *pàcibélúshì* (Chisanga) CJ
 2SM-1OM-teach.CAUS-FV 16saturday Chisanga
 ‘They teach (him) Chisanga on Saturday’
- c. **bá-mú-sààmbilish-à*
 2SM-1OM-teach.CAUS-FV
- d. *bá-ká-mú-sáámbílish-á* | (Chisanga)
 2SM-FUT3-1OM-teach.CAUS-FV Chisanga
 ‘they will teach him Chisanga’
- e. **bá-ká-mú-sààmbil-ish-à* | (Chisanga)
 2SM-FUT3-1OM-teach-CAUS-FV Chisanga

In (20a-c) we have examples in the present/habitual where (20a) is the disjoint form (marked by *-la-*) with a following object marked constituent as non-focal. The corresponding conjoint form (20b) is only grammatical with a following focal constituent, here *Saturday*, and is otherwise ungrammatical in final position in (20c). Recall that in the present/habitual the disjoint is marked by *-la-* and the conjoint has no marking. Notice that in the conjoint form (20b) we have bounded H spreading on the verb form, showing as discussed above that the tonal spreading patterns (and accompanying p-phrasing) also apply in segmentally marked CJ-DJ forms.

(20d-e) are examples where there is no CJ-DJ morpheme (in the future tense). In this case where only tone distinguishes phrase-final from non phrase-final verb forms the same focus interpretations also hold. When an object marker is present in (20d) and the co-referential object NP is not in focus then the verb shows unbounded H spreading and is phonological phrase final. The use of bounded H spreading in this case is ungrammatical as (20e) shows. Similar patterns are seen in questions as below.

- (21) a. Bùshé bàmàyó bá-á-fík-ílé mwàkà nshí? (MH_{V2-FV} CJ)
 Q 2mother 2SM-P4.CJ-arrive-P4 3year what
 ‘What year did mother arrive?’
- b. Bùshé bàmàyó bá-á¹lí-fík-¹ílé? (MH_{V2-FV} DJ)
 Q 2mother 2SM-P4.DJ-arrive-P4
 ‘Did mother arrive?’
- c. *Bùshé bàmàyó bá-á¹lí-fík-¹ílé mwàkà nshí? (MH_{V2-FV} DJ)
 Q 2mother 2SM-P4.DJ-arrive-P4 3year what
- d. Bùshé bàmàyó bá-ká-fík-à liiláli | ?
 Q 2mother 2SM-FUT3-arrive-FV when
 ‘When will mother arrive?’
- e. Bùshé bàmàyó bá-ká-fík-á | (liiláli)?
 Q 2mother 2SM-FUT3-arrive-FV (when)
 ‘Will mother arrive? When?’

Examples (21a-c) involve a tense (P4) that has segmental markers for the CJ-DJ (see table 1). (21a) with the conjoint marker *-a-* is grammatical with a following question word while use of the disjoint form *-ali-* in this context is ungrammatical as shown in (21c). When the disjoint form *-ali-* is used then the verb must be final in a p-phrase with no following question word. In this case an initial question particle, marking a polar question, is used (21b). Note that the tone of all the forms in (21a-c) undergo bounded H spreading because of the presence of the MH.

(21d-e) illustrate the future which has no morpheme marking the CJ-DJ alternation. In this case we see that the question word *liilali* ‘when’ is grammatical in (21d) with bounded H spreading on the preceding verb, so that the verb and question word are in the same p-phrase, but would be ungrammatical if the verb showed unbounded H spreading on the verb as in (21e) which then indicates a phrase-final form. The question word in (21e) can only be licit if it is interpreted as an afterthought, in a different p-phrase, indicated here with parenthesis on *liilali* ‘when’.

Another point to note on the interpretational properties of the CJ-DJ alternation in Bemba is that the disjoint form may have following constituents which may consist of new information. Thus it appears that we cannot strictly define constituents following disjoint forms as always non-focal/topical or dislocated. Consider the examples below. (22) is a reformulation of (21b) with a following constituent showing a disjoint form with following new information. (23) & (24) are question-answer pairs demonstrating the range of use of the CJ-DJ alternation in particular contexts.

- (22) Bushe bamayo bá-á¹lí-fík-¹ílé ulya mwaka? (MH_{V2-FV} DJ)
 Q 2mother 2SM-P4.DJ-arrive-P4 3DEM4 3year
 ‘Did mother arrive the previous year?’

- (23) a. Q: Bushe baChocho bá-¹cít-à inshi | ?
 Q 2SMChocho 2 SM-do-FV what
 ‘What does Chocho do?’
- b. A1: Bá-lá-sáámbílíl-á DJ
 2SM-HAB.DJ-learn-FV
 ‘She studies/goes to school’
- c. A2: Bá-lá-sáámbílíl-á palicisano na pacibelushi DJ
 2SM-HAB.DJ-learn-FV 16Friday CONJ 16Saturday
 ‘Yes she studies on Friday and Saturday’ (VP focus)
- (24) a. Q: Bushe baChocho kanshi na-bo bá-lá-sáámbílíl-á? DJ
 Q 2SMChocho so CONJ-2RCD 2SM-HAB.DJ-learn-FV
 ‘So Chocho also studies/goes to school then?’
- b. A1: Ee, bá-sáámbílíl-à palicisano na pacibelushi CJ
 yes 2SM-learn-FV 16Friday CONJ 16Saturday
 ‘Yes she studies/goes to school on Friday and Saturday’ (IAV focus)
- c. A2: Ee, bá-lá-sáámbílíl-á, nanguline ni palicisano na pacibelushi
 yes 2SM-HAB.DJ-learn-FV although COP 16Friday CONJ 16Saturday
 fye
 only (DJ, V focus)
 ‘Yes she studies, although it is only on Friday and Saturday’
- d. A3: *Ee, bá-lá-sáámbílíl-à palicisano na pacibelushi (DJ, bounded spread)

The question in (23a) shows bounded H spreading on the verb implying no p-phrase boundary immediately following the verb with the question word in IAV position. Two answers are possible given in (23b-c). (23b) is in the disjoint form with no following constituents and the verb provides new information. (23c) is also in the disjoint form but also includes additional constituents following the verb which are in focus and is therefore a case of VP focus. Thus disjoint forms indicate either Verb or VP focus. Both (23b-c) are marked by the disjoint marker *-la-* and in addition also show unbounded H spreading on the verb form that has been shown to coincide with disjoint forms.

In (24a) the verb occurs in final position and is in the disjoint form in this polar question. The possible answers to this question are given in (24b-d). (24b) is in the conjoint form and shifts the focus to the constituent following the verb. This can be interpreted as contrastive if we assume that specific days are selected out of the other days of the week. (24c) gives an answer where the verb is in focus and is treated as the most salient information with following information only providing further elaboration associated with the highlighted event. The verb is therefore in the disjoint form. As noted earlier, also in this case, the CJ-DJ forms are associated with contrasting tonal patterns that match up conjoint forms with bounded H spreading and disjoint forms with unbounded H spreading. (24d) shows that a segmentally marked disjoint form with bounded H spreading, which correlates with conjoint forms, is ungrammatical. This implies that CJ-DJ forms must match up with particular tone patterns correlating with the appropriate p-phrasing. If the focus is contrastive (or

more precisely corrective) then only the conjoint form can be used as shown in (25) below where only the conjoint answer in (25b) is grammatical while the disjoint (25c) is unacceptable.

- (25) a. Q: Bushe bamayo bá-bóómbà/bá-lá-bóómbá palicisano? (CJ or DJ)
 Q 2mother 2SM-work/ 2SM-HAB.DJ-work 16Friday
 ‘Does mother work on Friday?’
- b. A1: Iyoo, bá-bóómb-à palicitatu CJ
 no 2SM-work-FV 16Wednesday
 ‘No, she works on Wednesday’
- c. A2: *Iyoo, bá-lá-bóómb-á palicitatu DJ
 no 2SM-HAB.DJ-work-FV 16Wednesday

Givón (1975) makes the same observation and distinguishes two types of focus structures in Bemba correlating with CJ-DJ forms; Complement focus (CJ forms) and VP focus (DJ forms). He treats the distribution as aspect focus and the CJ-DJ markers as focus scope markers. Details of terminology aside, the data he discusses firmly illustrate the VP vs. IAV focus discussed thus far. VP focus correlates with new information while IAV focus as noted earlier is either new or contrastive. Consider the examples below replicated from Givón (1975: 190) illustrating use of P4 which has the V2-FV MH. The focus is underlined in the gloss. (NB tones are added as Givón only indicated tone on the TAMs).

- (26) a. bá-àlí-bóòmbélé sààná ‘They worked hard’ DJ
 b. bá-à-bóòmbélé sààná ‘They worked hard’ CJ
 c. bá-àlí-bóòmbélé mùmúshí ‘They worked in the village’ DJ
 d. bá-à-bóòmbélé mùmúshí ‘They worked in the village’ CJ
 e. bá-àlí-bóòmbélé nèèmífùmù ‘They worked with the chief’ DJ
 f. bá-à-bóòmbélé nèèmífùmù ‘They worked with the chief’ CJ

In each disjoint case in (26) the VP is under the scope of focus so that each statement provides new information for a question like ‘what did they do?’. In each conjoint case the constituent following the verb, the complement in IAV, is in focus where the question asked includes the verb like ‘how did they work’ ‘where did they work?’ ‘with whom did they work?’. In addition IAV focus tends to include contrastiveness so that the focus in each case offers a possible set of alternatives whether these are articulated or not. The distribution in (26), Givón argues, is supported by cleft focusing of the complement which obligatorily requires conjoint forms (Comp-focus in his terms) where the complement is in focus and the verb is presupposed rather than disjoint forms where the verb is not presupposed. Thus clefting in a conjoint form in (27a) is grammatical while the same is not for the disjoint in (27b).

- (27) a. mùùkáàté bá-à-líilé ‘It’s bread they ate’ (Comp focus) CJ
 b. *mùùkáàté bá-àlí-líilé (VP focus) DJ

Similarly, assuming the same presupposition argument, under the scope of negation only the conjoint form can be used (28a) vs. (28b), although note that the same distribution also holds when the verb is final (28c) vs. (28d).

- | | | | |
|---------|----------------------------|---------------------------------|----|
| (28) a. | ta-bá-à-lìlìlé umúkààté | ‘They didn’t eat <u>bread</u> ’ | CJ |
| b. | *ta-ba-àlì-lìlìlé umúkààté | ‘They didn’t eat <u>bread</u> ’ | DJ |
| c. | ta-ba-à-lìlìlé | ‘They didn’t eat’ | CJ |
| d. | *ta-ba-àlì-lìlìlé | ‘They didn’t eat’ | DJ |

Givón (1975: 191) argues that this can be explained if complement (conjoint) focus implies that the verb is not in focus i.e. supporting the idea that in conjoint forms IAV focus is what is relevant. In the same vein, disjoint forms are excluded from (restrictive) relative clauses and other pre-suppositional clauses since the verb could not be new information in these cases.⁸ Givón thus converges on the following distribution in Bemba aspect (CJ-DJ) focus:

Verb not new information = Comp focus	(CJ forms)
Verb new information = VP focus	(DJ forms)

This captures, as we have noted above, that disjoint forms involve either verb focus when the verb is final or VP focus when a disjoint form is used with a complement that is not an afterthought/presupposed. Conjoint forms involve focus on a following complement (IAV focus) excluding the verb in contexts where such a constituent is present, i.e. excluding examples like in (28).

A final case to consider is what form the verb takes in all new information contexts as inthetic sentences. Conjoint forms are generally used in answering questions like ‘what happened?’ (see Costa & Kula 2008) but disjoint forms can also be used to the exclusion of conjoint forms in some all new information contexts. Consider the examples in (29) as responses in a context discussing three former Zambian presidents.

- | | | |
|---------|---|------------------------------|
| (29) a. | Kaunda à-àlì- ¹ kúúl ¹ -ìlé | amasukulu... |
| | Kaunda 1SM-P4.DJ-build-PERF 6school | |
| | ‘President Kaunda built schools,...’ | |
| b. | *Kaunda à-à-kúúl ¹ -ìlé | amasukulu |
| | Kaunda 1SM-P4.CJ-build-PERF 6school | |
| c. | Kaunda à-à-kúúl ¹ -ìlé | amasukulu aya-sha-i-ful-il-a |
| | Kaunda 1SM-P4.CJ-build-perf 6school 6-NEG-REFLX-be.many-APPL-FV | |
| | ‘President Kaunda built many schools’ | |

With all new information in (29a) the disjoint form is used and the conjoint form is ungrammatical (29b). If the conjoint form is used (29c) then focus must be on the object which is in this case elaborated on as being extraordinary in some sense. From these examples it implies that we cannot conclude that allthetic sentences take the

⁸ Note that given examples (27a) and (28c) it appears that conjoint forms can occur finally at least just in terms of surface linear sequence. (27a) might suggest that the CJ-DJ is sensitive to underlying constituency since *bread* is a fronted object in this case, which can be treated as leaving a copy in some formalisations. Alternatively, the cleft structure in (27a) seems to include a relative clause ‘its bread that they ate’ which can be treated as falling outside the CJ-DJ alternation as in the examples in (13). For (28c) the expression of the CJ-DJ alternation in negative tenses still remains to be fully investigated but involves truth value/scope of assertion properties that must be incorporated. These issues are left to future research.

conjoint form. Indeed Hyman & Watters (1984) argue that such cases involve truth value focus so that some response is presupposed and thereby explaining the occurrence of disjoint forms in such contexts. It will be worth investigating whether conjoint forms inthetic sentences allow a possible contrastive interpretation which would then be deemed as licensing the conjoint form in those cases. I leave this matter to future research.

We can therefore conclude that in terms of interpretational and the correlated distributional properties the conjoint forms in Bemba show IAV focus which is either new information or contrastive focus, with the verb never included in the focus (pending further investigation ofthetic sentences). The disjoint form on the other hand always includes the verb in the focus and following constituents if they occur may consist of either back-grounded, additional, presupposed, non-focal information or new information when the whole VP is in focus. It should also be pointed out that it is much more preferred/natural to have no following constituent in the disjoint in cases where what follows is back-grounded/non-focal. A significant point to note is that these same properties also hold in non-contrasting TAMs where the verb form is distinguished by tone marking indicating phrase-final and non-phrase-final forms.

Having now discussed both the formal and the interpretational properties of the CJ-DJ alternation in Bemba we can return to the question of whether the tonal patterns associated with the distinction (bounded and unbounded H spreading) or indeed the phonological phrasing which these tonal patterns signal can be considered as encoding the CJ-DJ alternation. This issue is considered in the next section.

6. Evaluating tone marking and p-phrasing in the Bemba CJ-DJ alternation

As has been demonstrated the distribution and interpretation of verb forms from non-contrasting TAMs coincide with that of CJ-DJ forms by making reference to p-phrasing indicated by bounded and unbounded H spreading i.e. disjoint verb forms require a following phonological phrase. With respect to the mapping with syntactic structure and marking of syntactic constituency the right edge of a p-phrase in non phrase-final forms always coincides with the right edge of the VP as in (30a) below. For phrase-final forms at least two structures are possible. In one case the right edge of the p-phrase boundary coincides with the VP in which case the following constituent is non-focal and outside the VP as in (30b). In the other case the following constituent is within the VP and must be part of the focus as in (30c). As noted earlier the structure in (30a) indicates IAV focus, that in (30b) verb focus and that in (30c) indicates VP focus. The same phrasing also holds in (segmentally marked) CJ-DJ forms. (30) shows the non-contrasting future (F3).

- (30) a. Conjoint (IAV focus)
- | | |
|--------------------------------------|---------------------|
| [bá-ka-luk-il-a Kabwe] _{VP} | Syntactic Structure |
| (bá-ka-luk-il-a Kabwe) _φ | Prosodic Structure |
| (bá-ká-lúk-il-a Kabwe) _φ | Bounded Spreading |
- ‘They will weave for Kabwe’

- b. Disjoint (Verb focus, following constituent not part of focus)
- [bá-ka-luk-il-a]_{VP} [Kabwe]_{ADJT} Syntactic Structure
 (bá-ka-luk-il-a)_φ (Kabwe)_φ Prosodic Structure
 (bá-ká-lúk-íl-á)_φ (Kabwe)_φ Unbounded Spreading
 (bá-ká-lúk-íl-á)_φ (Kábwé)_φ Inter-word HTD & Unbounded Spreading
 ‘They will weave (for Kabwe)’
- c. Disjoint (VP focus, following constituent part of focus)
- [bá-ka-luk-il-a Kabwe]_{VP} Syntactic Structure
 (bá-ka-luk-il-a)_φ (Kabwe)_φ Prosodic Structure
 (bá-ká-lúk-íl-á)_φ (Kabwe)_φ Unbounded Spreading
 (bá-ká-lúk-íl-á)_φ (Kábwé)_φ Inter-word HTD & Unbounded Spreading
 ‘They will weave for Kabwe’

In (30a-b) the prosodic structure matches the syntactic structure and can in this sense be argued to indicate constituency. The same holds for the (segmentally marked) CJ-DJ forms in which case we can claim that the CJ-DJ alternation marks syntactic constituency. However, the form in (30c) and the segmentally marked equivalent do not support this analysis since there is a mismatch between the prosodic structure and the syntactic structure. Therefore at least the disjoint form cannot be relied upon to consistently indicate syntactic constituency.⁹ What is interesting is that both the CJ-DJ alternation and p-phrasing coincide in producing exactly the same structure, i.e. we find no case where there is a mismatch between the CJ-DJ alternation and p-phrasing so that the two systematically reinforce each other. Let us summarise the distributional properties of the CJ-DJ alternation and tone marking/p-phrasing to clarify whether they can be treated as different encoding strategies of the CJ-DJ alternation in Bemba. 5 pairs of distributional correlations are given in table 3 below. (‘tone marking’ refers to tone in verb forms in non-contrasting TAMs).

	<i>CJ-DJ/Tone-marking correlations</i>	<i>occur or not</i>
(i)	CJ-DJ + MH	yes
(ii)	tone marking + MH	no
(iii)	CJ-DJ with no tone contrast	yes
(iv)	CJ-DJ with tone contrast	yes
(v)	tone marking with regular tone rules	yes
(vi)	tone marking independent of regular tone rules	no
(vii)	p-phrasing rules apply to CJ-DJ	yes
(viii)	p-phrasing rules apply to tone marking	yes
(ix)	no surface p-phrasing in some CJ-DJ	yes
(x)	no surface p-phrasing in some tone marking cases	no

Table 3: Interaction between segmental CJ-DJ and tone/prosody

⁹ This mismatch can be explained in various ways in different theories of the syntax-phonology mapping. In Kula & Bickmore (to appear) we adopt an Optimality Theoretic approach formalising mapping relations as violable constraints.

In table 3 above (i&ii) compare the CJ-DJ alternation and tone marking with respect to whether they maintain a contrast when MHs are present. The segmentally marked CJ-DJ alternation retains the contrast (cf. 21a-b) but in tone marking cases the contrast between verb forms is lost (cf. 16-17). We saw earlier that this is because tone marking interacts with MHs which block unbounded H spreading in phrase-final forms. Thus tonal marking is in this case a poor choice for encoding the distinction if the contrast cannot be expressed in some cases. A tonally marked CJ-DJ alternation needs to involve a tone pattern that cannot be overridden i.e. one that is not derivable from the regular tone rules of the language as we see in Tswana. This means that tone marking does not distinctively mark CJ-DJ forms in Bemba. (iii&iv) evaluate whether segmentally marked CJ-DJ forms must occur with particular tone marking (unbounded and bounded H spreading) and show that although they do in some cases (cf. 6a-b) this is not a requirement (cf. 20a-b). This shows that segmental CJ-DJ marking is independent of tonal marking and that the presence of tonal marking in these CJ-DJ forms is controlled by phonological rules outside of the CJ-DJ alternation, only specifically occurring when H-toned SMs, TAMs or roots are present. (v&vi) show that tone marking is never seen to be independent of regular tone rules (cf. 20d-e, 21d-e) and if this is a requirement in order to be an independent and distinct marker of the CJ-DJ alternation then tone marking falls short in this case. (vii&viii) show that phonological phrasing applies across the board in both CJ-DJ cases (cf. 12, 20b) as well as in non-contrasting TAMs (cf. 21d-e); this is as we would expect since tone marking is what indicates p-phrasing. But following (ix&x) there are cases where in segmentally marked CJ-DJ forms, if the tone conditions are not met phonological phrasing cannot be read off the CJ-DJ forms (cf. 18a-b). To the contrary this never happens in tonally marked cases showing that the tonal marking patterns and p-phrasing are one and the same thing since the two H spreading patterns reflect p-phrasing. Thus while we see evidence of independence between (segmentally marked) CJ-DJ and tone marking and the accompanying p-phrasing we see a total dependence on tone marking and phonological phrasing. This implies that assuming tonally marked CJ-DJ forms is redundant since exactly the same information can be read off phonological phrasing. We must therefore conclude from the foregoing that tone does not encode the CJ-DJ alternation in Bemba.

This raises the question of what properties are central to the characterisation of the CJ-DJ alternation in Bemba? Although the general distributional facts above suggest that tone/phonological phrasing do not encode the CJ-DJ alternation in Bemba CJ-DJ forms are seen to coincide with particular prosodic structure. Why should segmental marking be considered to encode the CJ-DJ alternation but p-phrasing not if they are in fact seen to coincide? This issue is investigated by comparing in table 4 how the (segmentally marked) CJ-DJ alternation and tone/p-phrasing relate to formal and interpretational properties of the CJ-DJ alternation as discussed in the foregoing. See van der Wal (this volume) for a cross-Bantu comparison of these properties.

Reference to tone in table 4 implies phonological phrasing. There are only two points of contrast. The first is that while the CJ-DJ alternation is restricted to particular tenses, phonological phrasing (via tone) applies across the board including in nominals as might be expected. This is also what we see of p-phrasing in other languages like Chichewa ([Kanerva 1990](#)) where it is marked by penultimate lengthening. The second is that while the CJ-DJ alternation does not occur in relative and pre-suppositional clauses and under the scope of negation phonological phrasing still applies. As discussed earlier there is no CJ-DJ alternation in relatives, pre-suppositional clauses and negatives because an information structure contrast

requiring the verb to express new information focus cannot hold in these cases. This suggests that the CJ-DJ alternation, at least in Bemba, must indicate information structure. The parallelism we see between the CJ-DJ alternation and p-phrasing thus follows from the fact that p-phrasing is also used to express information structure (Costa and Kula 2008). Thus, as long as this can be read off the tone patterns, CJ-DJ forms show phonological phrasing that identifies the focus as occurring final in a p-phrase. We see this in the identical patterning of segmental CJ-DJ forms and p-phrasing on interpretational properties. There is no correlation with tense-aspect semantics so that the CJ-DJ alternation cannot be interpreted as marking particular aspectual contrasts and since p-phrasing is not restricted only to TAMs we expect no interaction in this case either. On constituent marking there seems to be no particular restriction on the CJ-DJ alternation being the sole marker of syntactic constituency or indeed exclusively marking a particular constituent when either the conjoint or disjoint forms are used since in each case it can equally be claimed to be marked by p-phrasing.¹⁰

FORMAL PROPERTIES	CJ-DJ	TONE
Restriction in tenses	✓	✗
Relative clauses, pre-suppositional clauses, negative tenses	✗	✓
Object marking has effect	✓	✓
Interaction with dislocation	✓	✓
Applies to nominals	✗	✓
INTERPRETATIONAL PROPERTIES		
Tense-aspect semantics	✗	✗
Information structure	✓	✓
- Verb focus	✓	✓
- IAV focus	✓	✓
- VP focus	✓	✓
CONSTITUENCY		
Conjoint (IAV focus) – mark VP	✓ (✗)	✓
Disjoint (V focus) – mark V	✓ (✓)	✓
Disjoint (VP focus) – mark VP	✗ (✓)	✗

Table 4: Correlation of general CJ-DJ properties with CJ-DJ and tone marking in Bemba

Thus the conclusion is that the CJ-DJ alternation is marked segmentally in Bemba in the present/habitual; the P4 perfective; the P4 anterior; P1/F1; and the present anterior. The CJ-DJ alternation indicates information structure highlighting constituents that are new information or contrastively focused. Phonological phrasing

¹⁰ Disjoint forms can be treated as marking the right edge of a VP to account both for cases where only the verb is in the VP as well as those where the verb has a following complement. The problem is that the latter case also holds for conjoint forms. A solution would be to treat disjoint forms as the only part of the distinction that correlates with constituency (shown in brackets in table 4). Needless to say a more elaborate syntax is needed to tease apart the possible differences that might exist here. I leave this to future research.

also signals information structure and for this reason the CJ-DJ alternation coincides with p-phrasing, identifying focus as p-phrase final.

The question is whether there ever was a tonally marked CJ-DJ alternation in Bemba. This is difficult to evaluate but it is possible that the bounded and unbounded H spreading patterns may have initially been associated to only some tenses and then got extended over time to all tenses. I concur with Sharman (1956) in the evaluation that the fact that these patterns do not override MHs suggests that they came later than MHs, suggesting that they may have been an innovation in these instances.¹¹ This is supported by the fact that MHs (at least for the past tense) are reconstructed to PB (Meeussen 1967). Similarly, the extension to segmentally marked CJ-DJ forms is probably also an innovation. The extension of originally word level tone patterns to the phrasal level would aid such innovation processes.

Concluding that the CJ-DJ alternation is not tonally encoded in Bemba nicely expresses the fact that CJ-DJ marking is restricted to a limited number of tenses as attested in other Bantu languages. Although there is no a priori reason why a system that marks the CJ-DJ alternation in every tense would not exist it is difficult to imagine a parallel system where it's tonal marking was as unpredictable as it is in Tswana (Creissels 1996), for example, and that such marking is present in every TAM in a language. In this sense Tswana fundamentally differs from Bemba in that the surface tonology of all verbs in Bemba can be predicted directly from the general tone rules of the language, whereas this is not the case in Tswana where an independent tone pattern must be specified to apply in particular TAMs and therefore treated as encoding the CJ-DJ alternation. Similarly, Haya (Hyman, this volume) has specific focus marked TAMs that tonally contrast the CJ-DJ alternation only in those particular TAMs.

The final discussion in the next section briefly looks at p-phrasing in nominals where the patterns support the idea that p-phrasing is not restricted to verbal forms and is seen to apply identically to nominals in similar information structure contexts.

7. Phrasal tone patterns in nouns

The phrasal status of bounded and unbounded H spreading can also be seen in nominal forms as some of the examples in section 3 (cf. 9-10) have already shown. Consider the following examples from Sharman & Meeussen (1955: 401) that illustrate the contrast. The tonal changes can be seen on the noun *ícisakuta* 'shelter' depending on whether the following constituent is within the same p-phrase or not. (Glosses have been added).

(31) Phonological phrasing in nominals

a. <i>íci-sakuta</i> 7-shelter	<i>ci-i-koté</i> 7SM-COP-old	→	<i>icísákútá cííkoté</i> 'The shelter is old'
b. <i>íci-sakuta</i> 7-shelter	<i>ci-koté</i> 7SM-old	→	<i>icísakuta cikoté </i> 'An old shelter'
c. <i>íci-sakuta</i> 7-shelter	<i>bá-kuul-ílé</i> 2SM-build-PERF	→	<i>icísakuta bá-kuul-ílé </i> 'The shelter they have built'

¹¹ Sharman (1956) notes that the P2 form is older than the other past tense forms with an identifiable previously irregular conjoint form. Since the P2 disjoint form did not show unbounded spreading in the mid 1950s this provides further evidence that the unbounded H spreading pattern is a later innovation.

d.	<u>ta</u> -ku-li	<u>í</u> ci-sakuta ...	→	takúli icísakuta ...
	NEG-17LOC-COP	7-shelter		‘There is no shelter (there)’
e.	<u>ta</u> -ku-li	<u>í</u> ci-sakuta	→	takúli icísákútá
	NEG-17LOC-be	7-shelter		‘There is no shelter’
f.	<u>ú</u> ku-kuul-a (-T)	<u>í</u> ci-sakuta	→	ukúkuula icísákútá
	15-build-FV	7-shelter		‘Building a shelter’

(31a,e-f) show unbounded H spreading on the noun when it is final in its p-phrase, exactly parallel to verb forms. Similarly (31b-d) show bounded spreading on the same noun when it is not final in its p-phrase. As these examples are from NB the bounded H spreading is binary and therefore only involve spreading to the next mora to the right which in this case involves a shift from the augment, a process that occurs regularly to (VCV) noun class markers. The same patterns are also seen in CB illustrated in (32) with noun adjective pairs.

(32)	a.	<u>í</u> císákútá cíí ¹ kóté	‘The shelter is old’
	b.	<u>í</u> císákútá <u>í</u> cíí ¹ kóté /...	‘An old shelter/The shelter which is old’
	c.	icísákuta cikòté /...	‘An old shelter/The shelter which is old’
	d.	ùlú-tààndá lú-sùmá /...	‘Nice star/the farmer who is nice’

(32a-b) show unbounded H spreading on the head noun implying that the following adjective/relative is not within the same phonological phrase as the head noun. In the relative in (32b) the augment is present in contrast to the adjectival and restrictive relative interpretations that have no augment.¹² (32c) shows bounded (ternary) H spreading on the head noun because the following constituent is within the same phonological phrase as the noun. In (32d) where the noun has a final lexical high we also see bounded spreading just as we saw in verb forms when a MH docks on the final.

In terms of information structure in (31) the nominal is highlighted/more salient when it occurs p-phrase final and in (32) the phonological phrasing leads to different interpretations of the head noun as independent or part of the following constituent.¹³ Thus we notice that nominals pattern exactly the same as verb forms providing further evidence that bounded and unbounded H spreading are part of regular tone rules that are not restricted to verbs. Under this assumption the patterning of nominals can be easily explained by the same tone rules/p-phrasing without postulating that the CJ-DJ alternation is also encoded in nominals.

The overall picture that emerges is that we can distinguish the CJ-DJ alternation in forms where the distinction is segmentally marked. In these cases, in addition, conjoint forms correspond to bounded H spreading and disjoint forms to unbounded H spreading. As far as phonological phrasing is concerned, focus occurs on

¹² Givón (1972) discusses similar noun-adjective examples which he treats on a par with relative clauses as indicating restrictive relatives in cases like (32c) and non-restrictive relatives in cases like (32b). See Kula (2007) and Kula & Cheng (2007) for more recent discussion of this distinction.

¹³ Sharman & Meeussen (1955: 401) argued for a much tighter connection with CJ-DJ: ‘Nominals with low-toned radicals and suffixes also show [unbounded H spreading] in stressed positions: thus *ú-mu-lim-o* → *umúlmó* (‘work’). It serves exactly the same purpose as with verb tenses: i.e. it emphasizes the word carrying it: or, more properly, minimizes the grammatical link with the following word, if any, and is therefore the form which must be used at the end of a sentence: its absence implies a strong link with the word following, and is therefore the form used, for example, at the head of a relative clause, and before possessives.’ (Parts in parenthesis and square brackets added).

constituents that are final in a phonological phrase. This explains why VP focus in disjoint forms requires the verb and the following post-verbal constituent not to occur in the same p-phrase. In this sense phonological phrasing, independent of the CJ-DJ alternation, also plays a role in identifying which constituent is in focus. The interplay between the CJ-DJ alternation, phonological phrasing and focus interpretation is such that the CJ-DJ alternation is a subset of phonological phrasing (indicated by bounded and unbounded H spreading) and the two are both subsets of interpretation where constituents are identified as part of new information focus (V or VP focus) or new or contrastive focus (IAV focus). In this way we capture the fact that while phonological phrasing interacts with the identification of focused constituents it does not itself encode the CJ-DJ alternation which is left to specific morphemes in specific TAMs.

8. Conclusions

This paper has argued that the Bemba CJ-DJ alternation is not as robust as has been assumed in previous literature. It is restricted only to those tenses that segmentally mark the contrast. Tenses without segmental marking of the CJ-DJ alternation have been shown to undergo regular tonal processes whose phrasal structure allows us to identify the different discourse functions of the constituents involved. Thus phonological phrase boundaries, indicated by tone, coincide with different discourse functions depending on whether the verb is phrased with a following constituent or not. Quite consistently if the verb is phrased together with a following constituent then there is IAV focus which is mainly contrastive and only occurs in the context of bounded H spreading. When there is a phonological phrase boundary immediately following the verb then the verb must be in focus with both V and VP focus as options. These latter interpretations always coincide with unbounded H spreading on the verb. The parallelism between this phrasal pattern and the CJ-DJ alternation is that the two exhibit the same information structure leading us to conclude that the current phrasal patterns may have historically been restricted to particular tenses but has since been expanded to all tenses including those that are segmentally marked. It is probably due to this additional phrasal marking that the loss of the conjoint P3 form can easily be handled in the system since p-phrasing can be used to identify different information structure even if only one form (formally the disjoint form) is present. Under the line of argumentation presented here this has led to the loss of the expression of the CJ-DJ alternation in P3 on a par with all other previously assumed tonal cases of the CJ-DJ alternation.

Thus in terms of the morphology of the verb, in most TAMs there is a single TAM marker which is used regardless of whether the verb is phrase-final or non-phrase-final (contrasted by regular tonal processes). As shown above such TAM marking can often include a MH in addition to any segmental affix(es) which interacts with regular tone rules. In a few TAMs, however, there are two lexical allomorphs the choice of which is dependent on whether the verb can occur phrase-finally or not with accompanying focus interpretation. These are the TAMs that encode the CJ-DJ alternation. With respect to the distribution of CJ-DJ forms the systematic observation in Bemba is that a conjoint form can never be final in a main clause while a disjoint form can be final or not. And in terms of interpretation the verb must be part of the focus in disjoint forms but must be excluded in conjoint forms.

This paper has argued that the most insightful way of analyzing the Bemba CJ-DJ alternation is to treat the regularity seen in tone marking and the associated p-phrasing as not encoding the alternation but rather the result of innovation of a possibly earlier restricted tonal process thereby affording phonological phrasing a

much greater role in the establishment of focus than previously assumed. It remains to be seen whether this pattern holds in other Bemba dialects in addition to NB and CB which are discussed here.

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