

# Predicate doubling by phonological copying

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## Abstract

In this paper, I argue for an approach to copy constructions in syntax that does not rely on the Copy Theory of Movement; rather, it employs copy operations as in standard cases of reduplication. As a preliminary case study, I consider predicate doubling constructions in (two varieties of) German, Hebrew, and Asante Twi. I argue that the choice between copying and *do* support in predicate doubling constructions can be reduced to the order of the two operations Move and Copy.

## 1. Introduction

### 1.1. Two Sources for Copies

It is standardly assumed that there are two ways how copies (here conceived of as *overt* copies, i.e., identical linguistic *forms* that have a common source) can arise in natural language. On the one hand, movement is assumed to leave non-overt copies in syntax (Chomsky 1981, 1995, 2001); however, only a tiny fraction of these are actually realized as overt copies (Nunes 1999, 2004, Gärtner 2002). On the other hand, reduplication in morphology is assumed to arise as a consequence of an individual copy operation, triggered by specific morphemes (Marantz 1982, McCarthy & Prince 1994, 1995, McCarthy et al. 2012) or morphophonological diacritics (Frampton 2009). Thus, the first approach starts out with potential copies all over the place and then *filters out* most of the potential copies, leaving few (in most cases: no) actual, overt copies. In contrast, the second approach starts out with no copies and then *generates* each actual copy. What follows is based on the conjecture (pace Bierwisch 2015) that it is unlikely that there are two radically different processes in natural languages that can lead to overt copying in morphology and syntax. Against

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\*What follows is still a fairly rough sketch, and the analysis of predicate doubling that I present is programmatic rather than comprehensive at this point. For discussion, I am grateful to Fabian Heck, Johannes Hein, Jochen Trommer, and Sten Vikner.

this background, there are two options. The first option is to strengthen the *filtering* approach. On this view, the copy theory of movement (see Chomsky 1981, 1993, 2008) can be held responsible for many (ideally, all) replicative processes, including classic cases of reduplication. Approaches along these lines have been developed by Grohmann & Nevins (2004), Kimper (2008), Alexiadou (2010), van Oostendorp (2012), and Korsah (2015, this volume), among others. The second option is to strengthen the *generation* approach. The techniques required for morpho-phonological reduplication can then be held responsible for many (ideally, all) replicative processes, including syntactic copying.

Closer inspection reveals that extending the filtering approach based on the Copy Theory of Movement faces several major obstacles.

## 1.2. Against a Filtering Approach

### 1.2.1. *Submorphemic Material*

If the Copy Theory of Movement underlies morpho-syntactic reduplication phenomena, *subword material*, and in many cases even *submorphemic material* that is phonologically defined, must undergo movement. Consider, for example, the case of initial segment reduplication in Gothic class VII verbs (with an invariant default vowel *ai* (schwa)) in (1), or the case of syllable-based reduplication in Yidin<sup>y</sup> (Pama-Nyungan; see Marantz 1982) in (2).

- |     |          |                |                |
|-----|----------|----------------|----------------|
| (1) | haita    | haihait        | ‘I was called’ |
|     | fraisa   | faifrais       | ‘I tried’      |
|     | auka     | aiauk          | ‘I increased’  |
|     | falpan   | faifalp        | ‘I folded’     |
| (2) | ɖimurU   | ɖimuɖimurU     | ‘houses’       |
|     | gindalba | gindalgindalba | ‘lizards’      |

One might think that a possible way out of this dilemma would be to assume that copying of submorphemic, morphologically defined material in (1) and (2) is an illusion; rather, what is copied might be assumed to have minimally morpheme-size, with unfaithful phonological realization (cf. McCarthy & Prince 1995 vs. Frampton 2009). However, this would not really solve the problem; it would still imply movement of subword material that cannot undergo movement in other contexts.

1.2.2. *Copies without Movement*

More generally, there are many cases of syntactic copying for which it is implausible that a movement operation could be postulated. E.g., this holds for echo reduplication in Bengali, as in *kalo makorja* ('black spiders') → *kalo makorja talo makorja* ('black and such spiders') (Fitzpatrick-Cole 1996); for context-sensitive reduplication in Bambara, as in *wulunyinilafilèla o wulunyinilafilèla* ('whatever dog-searcher-watcher') (Culy 1985); for various kinds of copying in idioms, as in sequential noun reduplication (cf. German *Buch für Buch*, 'book for book' or Russian *den' za dnëm*, 'day by day'; Williams 1994, Fleischer 1982, Jackendoff 2008, Jacobs 2008, Müller 2011), in x-and-x constructions (cf. German (*naja*), *schön und schön ...* ('well, pretty and pretty'); Ghomeshi et al. 2004, Finkbeiner 2012); or in the German *hin-her* construction (cf. *Krieg hin, Krieg her ...* ('war here, war there'); Finkbeiner 2015); or for *right*-peripheral wh-doubling in Swiss German (Riemsdijk 2012). In all these cases, not only is there no evidence for movement – a movement approach would violate well-established constraints like the Strict Cycle Condition (Chomsky 1973) and Antilocality (Abels 2003, Grohmann 2003).

1.2.3. *Linearization*

Assuming the Copy Theory of Movement to underlie cases of actual copying implies that it is difficult to capture *overt* syntactic doubling, given that copy deletion is otherwise the default option (cf. Chomsky 1981: 89). In line with this, developing a PF realization algorithm for the copy theory has proven to be a far from trivial task (Gärtner 2002, Nunes 2004), and severe problems arise with multiple remnant movement as in (3) in German (cf. den Besten & Webelhuth 1990, Müller 2014): It is not really clear how to get from (3b) to (3a).

- (3) a. [<sub>VP</sub> t<sub>2</sub> Gerechnet ] hat da<sub>1</sub> wie immer t'<sub>3</sub> keiner t<sub>3</sub> [<sub>PP</sub> t<sub>1</sub> mit ]  
           counted has there as always no-one with
- b. #[<sub>VP</sub> Da-mit gerechnet ] hat da<sub>1</sub> wie immer [<sub>VP</sub> da-mit  
           there-with counted has there as always there-with  
           gerechnet ] keiner [<sub>VP</sub> da-mit gerechnet ] [<sub>PP</sub> da<sub>1</sub>-mit ]  
           counted no-one there-with counted there-with

1.2.4. *Size Restrictions*

Syntactic copying typically cannot involve material of arbitrary size, as one would expect under the Copy Theory of Movement. Thus, Fanselow & Ćavar (2002), Fanselow & Féry (2013), Ott (2014), and Struckmeier (2015), among others, advance radical proposals based on the Copy Theory of Movement which postulate large copies that may reach the size of clauses. Crucially, however, these analyses are accompanied by massive PF deletion – in constructions involving *overt* copies, the size of the copied material is usually quite small.

For instance, *wh*-copy constructions in (substandard) German permit single *wh*-words like *wen* ('whom') to be copied, but not complex *wh*-expressions like *welchen alten Mann, der schläft* ('which old man who sleeps'); cf. Höhle (2000), Pafel (2000), Fanselow & Ćavar (2001), Nunes (2004), Pankau (2013), Murphy (this volume), and the examples in (4).

- (4) a. Wen<sub>1</sub> denkst du [<sub>CP</sub> wen<sub>1</sub> sie t<sub>1</sub> getroffen hat ] ?  
 whom<sub>acc</sub> think you whom<sub>acc</sub> she<sub>nom</sub> met has
- b. \* [<sub>DP<sub>1</sub></sub> Welchen alten Mann [<sub>CP</sub> der im Haus nebenan  
 which old man<sub>acc</sub> who in the house next door  
 wohnt ] ] denkst du [<sub>CP</sub> [<sub>DP<sub>1</sub></sub> welchen alten Mann [<sub>CP</sub> der  
 lives think you which old man<sub>acc</sub> who  
 im Haus nebenan wohnt ] ] sie getroffen hat ] ?  
 in the house next door lives she met has

Size restrictions of this type are typical of morpho-phonological reduplication but a priori mysterious in syntax.<sup>1</sup>

1.2.5. *Adjacency*

Copies often have to be adjacent, which is unexpected under the copy theory. This holds for all classic cases of morphological reduplication and for all replicative idioms; cf., e.g., the case of sequential noun reduplication in German in (5) as an illustration of the latter construction type.

<sup>1</sup>Note also that invoking the idea that *wh*-copies must be heads (Nunes 2004) is not compatible with the observation that some PPs (consisting of P and a minimal DP) can also participate in the construction (see Fanselow & Ćavar 2001, Nunes 2004, Pankau 2013).

- (5) a. Ich bin (\*veröffentliche) Seite auf (\*veröffentliche) Seite den  
 I am published page by published page the  
 Aufsatz durchgegangen  
 paper through gone
- b. Ich bin Jahr für Jahr nach Rügen gefahren  
 I am year for year to Rügen gone
- c. \*Jahr bin ich für Jahr nach Rügen gefahren  
 year am I for year to Rügen gone

Crucially, adjacency can be argued to also hold for syntactic copying. Here, the picture is blurred by the fact that subsequent operations can sometimes undo adjacency; cf. German *wh*-copy constructions like (6a). However, support for the hypothesis that syntactic copies can only arise under adjacency comes from the observation that intermediate positions cannot be skipped; cf. (6b) (see Pankau 2013).

- (6) a. Wen denkst du wen sie gesehen hat?  
 whom think you whom she seen has
- b. \*Wen denkst du dass sie wen gesehen hat?  
 whom think you that she whom seen has

The conclusion I would like to draw from these observations is that a filtering approach to syntactic copying in terms of the copy theory of movement should be abandoned in favour of a generation approach: The mechanisms required for reduplication can be held responsible for replicative processes involving linguistic objects more generally.

For concreteness, suppose that all instances of overt morphological and syntactic copying involve a replicative process associating phonological strings with some prosodic node  $\rho$  that acts as an affix (Saba Kirchner 2010, 2013, Bermúdez-Otero 2012, Bye & Svenonius 2012, and McCarthy et al. 2012).

In what follows; I would like to illustrate this approach to syntactic copying on the basis of verb doubling constructions. More specifically, I will address (i) predicate doubling in two varieties of German, and (ii) the intriguing pattern of verb doubling and *do* support with predicate fronting in Asante Twi that Hein this volume analyzes in a filtering approach based on the copy theory of movement. I will show that both phenomena can straightforwardly be analyzed

in a generation approach that relies on two possible orders of the elementary syntactic operations Move and Copy.

## 2. Predicate Doubling

### 2.1. Standard Cases of Predicate Doubling

In typical predicate doubling constructions, a verbal category of a clause must fulfill a dual function: On the one hand, it needs to undergo fronting to a clause-initial topic or focus (SpecC) position; and on the other hand, it must show up TP-internally, as (part of) a category that encodes finiteness. Given that these two contradictory requirements cannot be satisfied by a single item, predicate doubling may occur: A verbal category is fronted to SpecC (this may be a bare V or a VP, the latter potentially incomplete as a consequence of operations removing objects from the VP prior to fronting, e.g., via scrambling or object shift), and the same V is realized within TP as part of a V chain headed by a finite verb (either V itself, or an auxiliary), thereby giving rise to predicate doubling; see Cho & Nishiyama (2000), Abels (2001), Travis (2003), Kobele (2006), Landau (2006), Bayer (2008), Fleischer (2008), Kandybowicz (2008), Aboh & Dyakonova (2009), Trinh (2009), Vicente (2009), Müller (2009), and Hein (this volume), among others.

Some examples involving predicate doubling with bare V fronting from a variety of languages are given in (7).

- (7) a. *Lirkod* Gil lo *yirkod* ba-xayim  
 to.dance Gil not will.dance in.the.life  
 ‘As for dancing, Gil will never dance.’ (*Hebrew*; Landau 2006: 37)
- b. *Venir* me parece que ya no *vienes*  
 come.INF me.DAT seems that already not come.2SG  
 ‘As for coming, it seems to me that you aren’t coming in the end.’  
 (*Spanish*; Vicente 2009: 168)
- c. *Zingen* veln mir nisht *zingen*  
 sing.INF will we not sing.INF  
 ‘We will not sing.’ (*Yiddish*; Travis 2003: 244)
- d. Da *skrifi* mi de *skrifi*  
 COP write.1SG PROG write  
 ‘I am actually writing.’ (*Sranan Tongo*; Parkvall 2000: 89)

- e. *Wá wè Kòkú wá*  
 arrive it.is Koku arrive  
 ‘It is arrived that Koku has.’  
 (Fongbe; Lefebvre & Brousseau 2002: 503)
- f. *Yòùwó yá yóú ndú ní*  
 lend I lend him FOC  
 ‘It’s lending to him that I did.’ (Kisi; Childs 1995: 125 & 271)

In contrast, the sentences in (8) illustrate predicate doubling with complex VP fronting.

- (8) a. *Di kali manggi o manggite ...*  
 the small run 3SG run.PRF  
 ‘When he had just run off a little way ...’  
 (Berbice Dutch Creole; Kouwenberg 1994: 442)
- b. *Dumat’ čto Xomskij genij on dumaet, no čitat’ ego knigi*  
 believe that Chomsky genius he believes but read his books  
*ne čitaet*  
 not reads  
 ‘He does think that Chomsky is a genius but he doesn’t read his books.’  
 (Russian; Abels 2001: 4f., Aboh & Dyakonova 2009: 1040)
- c. *Rira bata ni Olu o ra bata*  
 buying shoes FOC Olu AGR buy shoes  
 ‘Olu BOUGHT the shoes.’  
 (Yoruba; Cho & Nishiyama 2000: 39)
- d. *Rira adie ti Jimo o ra adie*  
 buying chicken TI Jimo HTS buy chicken  
 ‘the fact/way that Jimo bought a chicken.’  
 (Yoruba; Kobele 2006: 214)
- e. *Leer el libro, Juan lo ha leído*  
 read.INF the book Juan CL has read  
 ‘As for reading the book, Juan has indeed read it.’  
 (Spanish; Vicente 2009: 167)
- f. *Liknot et ha-praxim, hi kanta*  
 to.buy ACC the-flowers she bought  
 ‘As for buying the flowers, she bought.’

- g. *Liknot hi kanta et ha-praxim*  
 to.buy she bought ACC the-flowers.  
 ‘As for buying, she bought the flowers.’

(Hebrew; Landau 2006: 37)

In the existing literature on the phenomenon, there is disagreement as regards specific aspects of the analysis (concerning, e.g., whether only one verbal chain is present or two chains are involved, what the role of verb object order is, how cross-linguistic variation can be derived, whether bare V fronting to SpecC is truly an option, etc.). However, at least for those languages where a movement analysis can be empirically substantiated, there would seem to be a growing consensus that it is the Copy Theory of Movement that holds the key to the construction: Predicate doubling, on this view, involves the PF realization of two verbal copies created by multiple movement – either via successive-cyclic movement (one chain), or via two separate movement steps from a single base position (two chains).

In contrast, suppose now (in line with the reasoning in the previous section) that the copy theory either does not hold to begin with (Müller 1998, 2014), or that abstract copies resulting from displacement can never be used for overt copying (Chomsky 1981) – i.e., that a filtering approach to syntactic copy constructions is not available, and that overt syntactic copies have to be generated by the same mechanism that is responsible for reduplication in morphology – a designated operation Copy.<sup>2</sup> For concreteness, I assume that the problem posed by conflicting demands on V (information-structurally triggered displacement to a specifier in the left periphery and required presence as (part of) a V chain indicating finiteness in a head position) in a language can be solved by inserting a prosodic affix  $\rho$  on a head (e.g., C, T or v) as a local *repair mechanism* (see Heck & Müller 2013a) in the course of the derivation, in minimal violation of the No Tampering Condition (see Chomsky 2008, 2013);  $\rho$  then effects local phonological Copy in the same way that triggers for reduplication in morphology do. This essentially amounts to a combination of the analyses proposed in Müller (2011) for copying in German idioms, and Trommer (2011, 2014) for morphological affixation of empty prosodic

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<sup>2</sup>As a side remark, let me point out that a possible conceptual argument for abandoning the Copy Theory of Movement *in toto* (rather than just assuming that it cannot be the source of overt syntactic copies) is that copying of strings is much simpler than copying of structure from the point of view of grammatical complexity (Rogers 1998, Kobele 2015).



material. Thus, in predicate doubling constructions, a copy of V is created after  $\rho$  insertion, and the original verbal category (either V or VP) moves on to the left periphery.

An important prediction is that material that results from copying onto  $\rho$  is internally inaccessible for further syntactic operations: It is just a string of segments. This has potentially far-reaching consequences for structure-sensitive processes like extraction, binding, and scope assignment in other copy constructions (like *wh*-copying). For the case at hand, it implies that the copy of V left behind attached to a head position (C, T, or v) is not just syntactically but also *semantically inert*. As argued by Bayer (2008), this seems to be the case.<sup>3</sup>

Of course, such an approach that derives overt copies by generating phonological strings (rather than by non-deletion of syntactic subtrees) faces several interesting challenges. For instance, the approach needs to be able to account for *incomplete identity* of the copies, as it may arise from stem alternation (e.g., in Yiddish, German and Spanish) or from different root realizations in non-concatenative morphology (e.g., in Hebrew): Clearly, subsequent morpho-phonological modifications can occur in both copies. This can then be addressed by carrying out the relevant readjustments *after* the copy has been generated (cf. Halle & Marantz 1993). In addition, the possibility might also be envisaged that  $\rho$ -driven copying can also involve morpho-syntactic rather than phonological features in some cases (but still no structure, and no semantic features). A plausible hypothesis as to which of the two versions of the copy mechanism is chosen might then relate to the timing of operations in a cyclic spellout model: If PF realization of some item precedes copying, (only) phonological features will be copied; if PF realization follows copying, the copy operation can only target morpho-syntactic features. I will not address the two options in any more detail here, focussing exclusively on purely phonological copying in what follows.<sup>4</sup>

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<sup>3</sup> Also see Müller (2011) on syntactic inactivity of the first item in sequential noun reduplications like *Tag für Tag* ('day by day').

<sup>4</sup> However, it can be noted that an extension of the general approach that permits copying of morpho-syntactic features might ultimately also account for phenomena like determiner doubling, clitic doubling or resumption, where there is less, or no, phonological similarity of the two items involved. As it stands, these phenomena are outside the realm of the present approach.

## 2.2. Predicate Doubling and Do-Support in German

As is well known, there are languages in which predicate doubling constructions are not derived by actually having two copies of the verb, but rather by inserting a dummy verb, i.e., by carrying out *do* support. German is such a language. In standard varieties of German, (9a) is impossible but (9b) is fully grammatical; this, in fact, is the only context in which the auxiliary *tun* ('do') can be used in Standard German (the use in various dialects such as Hessian is much more widespread; see Erb 1995).

- (9) a. #*Schlafen schläft* er nicht  
           sleep   sleeps he not  
       b. *Schlafen tut*    er nicht  
           sleep    sleeps he not

However, as noted by Fleischer (2008) and Bayer (2008), certain (mostly Northern or Northeastern) German varieties also exhibit regular verb doubling; i.e., in these varieties, (9a) is well formed. In contrast to what is the case in, say, Yiddish (see (7c)), the doubled verb seems to obey strict adjacency; i.e., (10) is impossible in all varieties of German.<sup>5</sup>

- (10) \**Schlafen hat* er nicht *geschlafen*  
        sleep   has he not   slept

Here is a sketch of an analysis of the *do* support pattern in predicate doubling constructions in Standard German and the more regular doubling pattern in certain Northern varieties. Let me begin with the latter. First of all, there is a VP that needs to undergo topicalization, for information-structural reasons.<sup>6</sup> I assume that each phrase is a phase, not just vP and CP (see Müller 1998, 2014 and references cited there). Given the Phase Impenetrability Condition (PIC; Chomsky 2001), this implies that if a VP moves to SpecC, intermediate movement steps must target both Specv and, crucially, SpecT. Now, copying in Northern varieties is locally triggered on the CP cycle by  $\rho$  insertion as a last

<sup>5</sup>Fleischer 2008: 260 states, with reference to these varieties: 'Im Deutschen ist es fast nie der Fall, dass die verdoppelte Form des Verbs nicht an der 2. Stelle steht' (translation 'In German, it almost never the case that the doubled form of the verb is not in second position').

<sup>6</sup>This VP may be complete or incomplete, depending on whether some other movement operation has taken out material at an earlier stage. I contend that bare V topicalization is not an option in German, pace Fanselow 1985, 2001, 2002 and others; see Müller 2014.

resort operation, so as to provide both (a) a lexicalization of C (the verb-second property; see Bayer 2008) and (b) a verbal topic specifier for C (an instance of information structure-driven movement to SpecC). Note that at the point where  $\rho$  effects copying of V, the categories C and VP (in SpecT) are strictly adjacent; and so are V in C and VP after the phonological copy operation. (V in C is just a phonological string, hence syntactically and semantically inert from now on.) After Copy has applied to V, the VP is affected by Move, and placed in SpecC. The following derivation underlies (9a).<sup>7</sup>

- (11) *Predicate doubling via copying in varieties of German*
- a. *Structure after intermediate Move of VP to SpecT*  
 $[_{CP} C [_{TP} VP [_{T'} [_{vP} \dots t_{VP} ] T ] ] ]$
  - b. *Insertion of  $\rho$  as a last resort*  
 $[_{CP} \rho\text{-}C [_{TP} VP [_{T'} [_{vP} \dots t_{VP} ] T ] ] ]$
  - c. *Copy*  
 $[_{CP} [_{\rho} V]\text{-}C [_{TP} VP [_{T'} [_{vP} \dots t_{VP} ] T ] ] ]$
  - d. *Final Move of VP to SpecC*  
 $[_{CP} VP [_{C'} [_{\rho} V]\text{-}C [_{TP} t'_{VP} [_{T'} [_{vP} \dots t_{VP} ] T ] ] ] ]$

It follows from this approach that if there is no need for copying, it cannot apply. This accounts for the ill-formedness of an example like (12).

- (12) \*Er *schläft* nicht *schlafen*  
 he sleeps not sleep

Also, given that copying applies on the CP cycle, it can never create material in the c-command domain of v, due to the Strict Cycle Condition (cf. Chomsky 1973). This accounts for the ill-formedness of an example like (10).

As for Standard German, it employs a different repair strategy upon facing the dilemma created by conflicting demands of information structure (which requires VP topicalization) and purely syntactic requirements (root C requires lexicalization, the verb-second property). Instead of copying V onto a reduplicative affix  $\rho$  on C, a dummy verb *tun* ('do') is inserted. The choice between the two options might be taken to suggest an optimality-theoretic modelling (see Grimshaw 1997, Vikner 2001). I will adopt a version of this kind of approach

<sup>7</sup>Throughout this paper, traces are only present in derivations to simplify exposition.

here that relies on different orders of the two basic operations Merge and Copy.<sup>8</sup> Recall that the derivation in (11) relies on an order where Copy (of V) precedes Move (of VP from SpecT to SpecC). However, suppose now that Standard German differs from the varieties that employ copying in that the order of Copy and Move is reversed, such that Move precedes Copy. In this case, the V which is required for  $\rho$ -induced copying onto C is structurally too far removed from C to permit the successful application of a Copy operation, and *do* is inserted on T as a last resort: V copying is bled by intermediate VP fronting to SpecT. The derivation of (9b) is shown in (13).

- (13) *Predicate doubling via 'do' support in Standard German*
- a. *Structure after intermediate Move of VP to SpecT*  
 $[_{CP} C [_{TP} VP [_{T'} [_{VP} \dots t_{VP} ] T ] ] ] ]$
  - b. *Insertion of  $\rho$  as a last resort*  
 $[_{CP} \rho-C [_{TP} VP [_{T'} [_{VP} \dots t_{VP} ] T ] ] ] ]$
  - c. *Final Move of VP to SpecC*  
 $[_{CP} VP [_{C'} \rho-C [_{TP} t'_{VP} [_{T'} [_{VP} \dots t_{VP} ] T ] ] ] ] ]$
  - d. *No Copy possible  $\rightarrow$  'do' support*  
 $[_{CP} VP [_{C'} [\rho \text{ do}]-C [_{TP} t'_{VP} [_{T'} [_{VP} \dots t_{VP} ] T ] ] ] ] ]$

Thus, given this reasoning, whereas the interaction of Move and Copy in (13) is an instance of bleeding, the interaction of Move and Copy in (11) is an instance of counter-bleeding: In (11), Move comes too late to block copying of V.

At this point, what is still missing is a precise concept of locality that ensures that a  $\rho$ -driven Copy operation can be carried out if VP is in a lower position (as in (11)) but not if VP is in a higher position (as in (13)). For the case at hand, it would suffice to assume that Copy is only possible under c-command, as assumed by Chomsky (2001) for Agree:  $\rho$ -C c-commands V in (11c) (before final Move of VP to SpecC), but not in (13d) (after final Move of VP to SpecC). Still, in the next subsection I will present evidence that a slightly more liberal concept must be adopted: For two heads X and Y to participate in Copy, at least one of them has to c-command the other one. Thus, I would like to suggest the following locality constraint for Copy.

<sup>8</sup>See Heck & Müller (2013a,b), Georgi (2014), and Assmann, Georgi, Heck, Müller & Weisser (2015), among others, for this general type of approach, based on operations like (intermediate and final) Move, Merge, and Agree.

(14) *Locality of Copy*

A prosodic affix  $\rho$  on a head X can trigger copying of Y to X only if (a) or (b) holds.

- a. X c-commands Y.
- b. Y c-commands X.

Note that a V dominated by VP in SpecC does not c-command C; this ensures that *do* support always shows up in Standard German.<sup>9</sup>

In the next subsection, I would like to turn to predicate doubling in Asante Twi. Here, the two options for predicate doubling constructions just discussed are found within a single language, where they are in complementary distribution.

2.3. Predicate Doubling in Asante Twi

Hein (this volume) observes an interesting pattern in Asante Twi (based on data provided by Sampson Korsah (p.c.)). A language typically chooses either copying throughout in predicate doubling constructions (like, e.g., Hebrew) or it resorts to *do* support throughout in predicate doubling constructions (like Standard German; but recall footnote 9 for a possible qualification). However, Asante Twi employs both operations, depending on whether there is bare V fronting or complex VP fronting. Thus, focus movement of bare V to SpecC in Asante Twi triggers verb doubling; cf. (15a).<sup>10</sup> In contrast, focus movement of a complex VP in Asante Twi triggers *do*-support; see (15b).

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<sup>9</sup>Two remarks. First, the possibility that some variety of German permits *both* orders of operations – Copy before Move and Move before Copy – is not excluded in principle; it might indeed be conceivable that there are speakers who can use either option. And second, given that phrase structure is only created by Merge (or Move) operations it is clear that unergative intransitive verbs must be accompanied by some other item so that a fronted V is still part of a complex VP; something to this effect has often been proposed, for quite different reasons (see, e.g., Bobaljik 1993, Bittner & Hale 1996, among many others). Also, it is clear that a fronted VP from which all material except for V has been extracted (e.g., by scrambling) must still block c-command of V even if it is assumed that movement does not leave a trace or a copy.

<sup>10</sup>Hein this volume puts forward independent evidence that (15a) is to be analyzed as an instance of bare V fronting to SpecC (cf., e.g., Vicente 2009, among others), rather than as remnant VP movement fed by earlier object scrambling, as seems correct for analogous constructions in German.

- (15) a. *Si*-(e)            na    Kofi *a-si*/\**a-yɔ*            dan  
           build- NLZR FOC Kofi PRF-build/PRF-do house
- b. Dan *si*-e            na    Kofi \**a-si/a-yɔ*  
           house build- NLZR FOC Kofi PRF-build/ PRF-do

Hein's (this volume) analysis relies on the Copy Theory of Movement; it qualifies as a filtering approach (in the sense of section 1). Furthermore, two post-syntactic operations are postulated: On the one hand, Chain Reduction PF-deletes all non-initial copies in chains; on the other hand, head-to-head movement (unlike focus movement applying to a bare V) is assumed to be a PF operation that does not leave a trace (and that moves V to T in Asante Twi). Importantly, he further assumes that the derivational order of the two post-syntactic operations is parametrized from one language to the other. On this view, a language like Hebrew has head-to-head movement preceding chain reduction. Therefore, the non-overt copy that, by assumption, is left behind after syntactic V or VP fronting is the source of post-syntactic head-to-head movement, and subsequent Chain Reduction comes too late to block head-to-head movement (an instance of counter-bleeding). However, Asante Twi has the reverse order of post-syntactic operations: Chain Reduction applies before head-to-head movement. Consequently, the copy left by information structure-driven focus movement to SpecC is removed before head-to-head movement has a chance to apply (an instance of bleeding), and *do*-support takes place as a last resort operation to provide lexicalization of T. At least, this is what happens with focus movement applying to VP, as in (15b). Crucially, focus movement applying to a bare V, as in (15a), behaves differently: Here, Chain Reduction cannot apply (despite the order of operations that would favour it) because the fronted V and its trace do not in fact form part of a single chain (chain formation would violate the Chain Uniformity Condition given that the fronted item qualifies as maximal in SpecC whereas its copy does not). Therefore, nothing blocks post-syntactic head-to-head movement in (15a); and *do*-support is not available.

This analysis works well. Still, it depends on the assumption that head-to-head movement is post-syntactic (and does not leave a copy itself), which might be considered controversial. Also, it necessitates the assumption that a moved item and its copy trace do not always form a chain even though they are transparently related to one another by the movement operation.

In what follows, I outline an approach that reinterprets Hein's analysis: It does not rely on the copy theory (or on head movement at PF), and it fits into the picture drawn in the previous two subsections while maintaining Hein's fundamental insight that the relative order of two operations is responsible both for parametrization in general and for the asymmetric copying pattern of Asante Twi. However, instead of Chain Reduction at PF and head-to-head movement at PF, it is the syntactic operations of Move and Copy that are relevant. Thus, we move from a filtering analysis to a generation analysis.

Recall first that I have assumed that an item that needs to reach SpecC (as an instance of focus movement or topicalization) must pass through SpecT on its way to its ultimate landing site (because of the PIC, and because every XP is assumed to have phase status). Next, recall that in this approach, V copying is derived by insertion of a prosodic affix  $\rho$  that triggers reduplication. In German, the relevant head that is the target of  $\rho$  insertion is C; in Asante Twi, it is T. Now, if Copy precedes intermediate Move on the TP cycle, true doubling is expected throughout, as in Hebrew. Assuming that a focus-fronted verbal category (bare V or VP) first undergoes movement to Specv (and then to SpecT and, finally, SpecC), a  $\rho$ -induced copy of V on T is generated before the verbal category (V or VP) moves on to SpecT. As in Hein's (this volume) original analysis, this is a case of counter-bleeding; see (16), where this is illustrated for VP fronting (successive-cyclic V fronting works in exactly the same way).<sup>11</sup>

(16) *Predicate doubling via copying in Hebrew*

- a. *Structure after intermediate Move of VP to Specv*  
 $[_{TP} T [_{vP} VP [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]$
- b. *Insertion of  $\rho$  as a last resort*  
 $[_{TP} \rho-T [_{vP} VP [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]$
- c. *Copy*  
 $[_{TP} [\rho V]-T [_{vP} VP [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]$
- d. *Intermediate Move of VP to SpecT*  
 $[_{TP} VP [_{T'} [\rho V]-T [_{vP} t'_{VP} [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]]]$
- e. ...
- f. *Final Move of VP to SpecC*  
 $[_{CP} VP C [_{TP} t'_{VP} [_{T'} [\rho V]-T [_{vP} t'_{VP} [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]]]$

<sup>11</sup>Subject raising to SpecT is ignored for reasons of simplicity, here and in what follows. Also, this derivation is a simplification in that Landau argues that it is actually vP rather than VP that undergoes the movement.

Thus, this derivation closely mirrors the one given above for varieties of German that permit genuine copying; in fact, the only relevant difference is whether the interaction takes place on the CP cycle or on the TP cycle.

Consider next the scenario in which intermediate Move on the TP cycle precedes Copy (as in Asante Twi). Suppose first that it is a VP that undergoes the intermediate movement step to SpecT. In this case, Move of VP to SpecT bleeds Copy applying to V: V is embedded in a VP in SpecT, and hence does not c-command T. Since T also does not c-command V anymore at this point, Copy is blocked by the constraint *Locality of Copy* in (14), and *do* support is required. All this is shown by the derivation in (17).

- (17) *Predicate doubling via do-support in Asante Twi: VP*
- a. *Structure after intermediate Move of VP to Specv*  
 $[_{TP} T [_{vP} VP [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]$
  - b. *Insertion of  $\rho$  as a last resort*  
 $[_{TP} \rho-T [_{vP} VP [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]$
  - c. *Intermediate Move of VP to SpecT*  
 $[_{TP} [_{VP} V DP ] [_{T'} \rho-T [_{vP} t'_{VP} [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]]]$
  - d. *No Copy possible;  $\rightarrow$  'do' support*  
 $[_{TP} [_{VP} V DP ] [_{T'} [\rho do]-T [_{vP} t'_{VP} [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]]]$
  - e. ...
  - f. *Final Move of VP to SpecC*  
 $[_{CP} VP C [_{TP} t'_{VP} [_{T'} [\rho do]-T [_{vP} t'_{VP} [_{v'} DP_{subj} [_{v'} v t_{VP} ]]]]]]]]$

(17) mirrors the situation in Standard German, except for the fact that it is the TP cycle rather than the CP cycle that is involved here.

However, suppose now that it is a bare V that undergoes the intermediate movement step to SpecT. As argued by Hein this volume, this is an option in Asante Twi but not in German. In this case, V is *not* embedded by another category in SpecT, and it therefore qualifies as sufficiently close to  $\rho$  on T to permit copying: V in SpecT c-commands T, which implies that the fact that T does not c-command V anymore after the latter has undergone movement to SpecT is irrelevant. Thus, there is no bleeding of Copy applying to V by intermediate Move that fronts V to SpecT. This is illustrated in (18).



- (18) *Predicate doubling via copying in Asante Twi: V*
- a. *Structure after intermediate V movement to SpecV*  
 $[_{TP} T [_{VP} V [_{V'} DP_{subj} [_{V'} v t_V ]]]]$
  - b. *Insertion of  $\rho$  as a last resort*  
 $[_{TP} \rho-T [_{VP} V [_{V'} DP_{subj} [_{V'} v t_V ]]]]$
  - c. *Intermediate Move of V to SpecT*  
 $[_{TP} V [_{T'} \rho-T [_{VP} t'_V [_{V'} DP_{subj} [_{V'} v t_V ]]]]]]$
  - d. *Copy  $\rightarrow$  no do support*  
 $[_{TP} V [_{T'} [\rho V]-T [_{VP} t'_V [_{V'} DP_{subj} [_{V'} v t_V ]]]]]]$
  - e. ...
  - f. *Final Move of V to SpecC*  
 $[_{CP} V C [_{TP} t'_V [_{T'} [\rho V]-T [_{VP} t'_V [_{V'} DP_{subj} [_{V'} v t_V ]]]]]]]]$

More generally, it follows from *Locality of Copy* in (14) that Copy triggered by some  $\rho$  on a head (C or T, in the cases discussed here) is possible under c-command (see (11), (16)), and with a specifier (see (18)), but not with an item included in a specifier (see (13), (17)). Thus, as in Hein's approach, in the present analysis the generalization can be derived that there can be no language in which VP fronting triggers copying but bare V fronting does not.

At present, I take it to be an open question how (14) relates to the general tendency that copying presupposes adjacency (see above); for now, it may be assumed that adjacency is an additional requirement. It might also be worth pointing out that the (b) clause in (14) has the same function in the present reanalysis of Hein's (this volume) approach as the Chain Uniformity Condition in the original analysis (in that it distinguishes between V and VP fronting).

Needless to say, there are many further issues in the syntax of predicate doubling that will ultimately have to be clarified; but for now, I will leave it at that, concluding that a generation approach to predicate doubling constructions that does not rely on the copy theory of movement but on the two basic operations of Move and Copy looks like a viable alternative to the standard filtering approach.

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