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**Do-support as spellout of split head chains**

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1. Introduction

Traditional analyses of do-support share two core properties: i) they link do-support with the inability of the verb to form a relation with an inflectional head, such as T (e.g. via head movement or lowering), and ii) they posit a constraint that requires the inflectional head to combine with a verb (Lasnik 1981, Halle and Marantz 1993, Bobaljik 1995). Based on crosslinguistic data, we argue against both aspects of the traditional view. First, it incorrectly predicts that V-to-T movement and do-support should not co-occur in a language (section 3). And second, it does not capture crosslinguistic generalizations about which inflectional heads are supported by do (section 4). In section 2, we develop an analysis of do-support as the outcome of chain splitting, in which a relation between V and T is successfully established and only later split. The successful formation of a head chain (containing V, T, and possibly other heads) accounts for the fact that languages with V-to-T movement may exhibit do-support, and derives the attested do-insertion positions from independent properties of head chains in a given language.

2. Analysis: Do is inserted in split head chains

We assume that heads in the clausal spine form a head chain. The precise mechanism of head chain formation is orthogonal. Possibilities include head movement, agreement (e.g. Bjorkman 2011), or a mirror-theoretic complementation line (e.g. Svenonius 2016). The entire head chain is pronounced as an inflected verb in one of the positions it contains. Following previous work, we implement this by positing a diacritic (*) on the head in which the entire head chain is pronounced (Svenonius 2016, Arregi and Pietrazsko 2019). In English, for example, the head chain is pronounced in v in declarative clauses – a position

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*We would like to thank Rajesh Bhatt and audiences at UM ass and NELS for helpful feedback and discussion. All errors are ours.*

*In Arregi and Pietrazsko 2019, we propose that head chains are formed via Generalized Head Movement – a syntactic relation that unifies head raising and lowering. The analysis of do-support we present here does not rely on our particular implementation of head chain formation.*

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in which the verb follows negation and certain adverbs (1a). In contrast, verbs in French are pronounced in T, preceding negation and adverbs (1b). Another position in which head chains may be pronounced is C. This is the case e.g. in V2/V1 clauses in German languages, such as matrix interrogative CPs in English (1c).2

(1) a. English declarative clause
   \[\text{TP} \quad [\text{VP} \quad [\text{v} \quad [\text{v} \quad \text{...}]]]]

b. French declarative clause
   \[\text{TP} \quad [\text{T} \quad [\text{v} \quad [\text{v} \quad \text{...}]]]]

c. English interrogative clause
   \[\text{CP} \quad [\text{C} \quad [\text{TP} \quad [\text{v} \quad [\text{v} \quad [\text{v} \quad \text{...}]]]]]]

As we see in (1c), a head chain main contain more than one \( \text{^*}-\)head. We propose that head chains are always pronounced in the highest \( \text{^*}-\)position.

We propose that lexical head chains (i.e. those containing a lexical V, rather than an auxiliary) may split in certain structural contexts. Splitting of a successfully formed head chain is the result of applying one of the following rules. Split-by-deletion (2) is triggered when part of the head chain is deleted (via ellipsis or copy deletion in phrasal movement). The split occurs at the deletion site. Split-by-intervention (3) takes place under different structural conditions, namely when a specifier intervenes between heads in the chain. In English, the set of interveners includes subjects and negation, but not adverbs.3 Split-by-intervention always splits the chain at \( \text{vP} \), no matter the position of the intervener.

(2) Split-by-deletion
   \[\text{CP} \quad [\text{C} \quad [\text{T} \quad [\text{v} \quad [\text{v} \quad \text{...}]]]]]

(3) Split-by-intervention
   \[\text{CP} \quad [\text{C} \quad [\text{T} \quad [\text{v} \quad [\text{v} \quad [\text{v} \quad \text{...}]]]]]

Both operations create a new head chain which does not contain a lexical verb (C-T-v in (2), C-T in (3)). We refer to such chains as orphan chains. We propose that do-support is the spellout of an orphan chain. Under this view, there is no independent do-insertion.

2We assume that C is in not part of the head chain in declarative clauses.

3We assume that full and contracted negation in English are both specifiers. Furthermore, traces, such as the vP-internal trace of the subject, do not count as interveners. See Bobaljik 1995:

3. Do-support is not due to failure of Head Movement or Lowering

Under the traditional view, do-support arises when the verb doesn't combine with an inflection. This accounts for a well known asymmetry between English and French: unlike English, lexical verbs in French surface in T, bleeding do-support. This theory thus predicts that do-support should not be possible in a language in which lexical verbs surface in T. In this section we report data from Monnese showing this prediction to be wrong, and demonstrate how Split-by-intervention derives this puzzling pattern.

3.1 Monnese has both V-to-T movement and do-support

In Monnese, both auxiliaries and lexical surface to the left of adverbs, that is, both move to T under the traditional account (Bennicci & Polletto 2004:59):

(5) I à semper tfakolà
    he have.3SG always spoken

(6) I tfakolà semper
    he speak.3SG always

He's always spoken.'

He always speaks.'

Like English, Monnese exhibits Subject-Auxiliary Inversion (SAI) in interrogative clauses, i.e. a finite verb surfaces in C (Bennicci & Polletto 2004:63-68). Given that both lexical verbs and auxiliaries move to T, we expect that both should surface in C in questions (by T-to-C movement). This is, however, only true for auxiliaries (7). With lexical verbs, do surfaces instead in C (8).

\[\text{TP} \quad \text{T}+\text{vP} \quad [\text{Adv} \quad [\text{he} \quad [\text{he} \quad \text{...}]]]]\]
This analysis correctly predicts that the pronunciation position of the lexical verb in questions is lower than its position in declarative clauses:

(11) tfjakola mia
he speak.3SG
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(12) fe -t mia majal 'l porn?
do.2SG -you not eat.INF
'He doesn't speak.'

(Benincà & Polletto 2004:60)

(13) Bjorkman 2011:190–191

In declarative CPs, there is no split and the verb is pronounced in T*, preceding negation. The split in interrogative clauses traps the verb inside VP, where it must follow negation.4

Auxiliary and lexical verbs form independent head chains (13). Head chains containing an auxiliary verb are not targeted by chain splitting rules, effecting the spellout of an auxiliary in C, the highest *-position.

4 Bjorkman (2011) draws a similar conclusion from these facts. The account she offers treats do-support in English and Monnese SAI contexts in a non-uniform way, unlike the analysis in the next subsection.

4Chains with no *-heads are pronounced in the highest position by default (see Arregi and Pietraszko 2019).

4Negation in Monnese is does not cause a split. We assume, following Benincà and Polletto 2004, that negation is adverbal in this language.
Like English, MSc has C* and v*. The finite verb surfaces in C* in V2 sentences (the highest *-position). In other sentences, the head chain does not include C, and the verb surfaces in v*.

In the absence of an auxiliary, predicate ellipsis triggers do-support, and do surfaces in exactly the positions that the verb does in the nonelliptical source, i.e. C (16a) or v (16b) (examples from Houser, Mikkelsen, and Toosarvandani 2011:249–252; see also Sailor 2009, 2018, Platrick 2012, Thorne 2012, Bentzen, Merchant, and Svensson 2015).

Unlike MSc, the position of do in English is different from that of finite main verbs. We argue that this follows from the site of chain splitting (either by deletion or intervention), which is vP. In the absence of an auxiliary, the main verb typically surfaces in a low position, which we take to be v (Emmonds 1970, Pollock 1989). On the other hand, in predicate ellipsis constructions, do surfaces in C in SAI contexts, and in T otherwise:

English has vP ellipsis (vPE), and by Split-by-deletion, the orphan chain excludes v*; Since the usual position in which the verb surfaces is missing, do surfaces in C or T; depending on whether the head chain includes C or not:

We propose that MSc has Split-by-deletion, and that the elided constituent is VP (VPE), which determines the site of the split:

As shown in previous sections, the split is always at vP in cases of intervention, which, as in vPE, forces do into a higher position. The lower head chain is pronounced in v*:
4.3 VP ellipsis under auxiliaries: Do in v

The low target of ellipsis in MSc (VP) leads to the correct prediction that these languages have do-support under auxiliaries (example from Houser, Mikkelsen, and Toosarvandani 2011:271, see also Platzack 2012, Thoms 2012, Bentzen, Merchant, and Svenonius 2013):

(22) Nu fisker jeg ikke efter en partner. Men hvis jeg havde gjort Δvp, havde jeg ... now fish I not after a partner but if I had done had I 'I’m not looking for a new partner. But if I had, I would ...'

T forms a head chain with the auxiliary instead of the main verb, which is in a head chain with v*. VPE results in an orphan chain with only v*, which is where do surfaces. Do-support under auxiliaries is also possible in British English, which we take as evidence that this dialect has VPE (in addition to vPPE) (example from Thomas and Sailor 2018:1; see also Chalkraft 2006, Haddican 2007, Aelbrecht 2010, Baltin 2012, Thoms, to appear):

(23) Kim isn’t running for office now, but she has done Δvp in the past.

4.4 Do in both T and v in the same sentence

Since British English has VPE and both types of splits, the analysis correctly predicts sentences with two instances of do-support:*

*Many speakers who accept do-support under auxiliaries reject these double-do sentences. We assume that, for these speakers, VPE (as opposed to vPPE) can only be licensed by auxiliaries.

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(24) John said he would help, but he doesn’t usually do Δvp.  

(Chalkraft 2006:5)

VPE splits the chain at VP, and the resulting orphan T-v* chain is further split by intervention. Thus, the sentence contains two orphan chains, each of which is realized as do.

5. Conclusion

Do-support is due to splitting of successfully formed head chains, caused by intervention or deletion. Splits result in orphan chains that are realized as do. The account correctly predicts that do-support is possible in grammars in which lexical verbs normally surface in T, as attested in Monnese. Furthermore, the variety of positions in which do surfaces cross-linguistically follows from independently motivated properties of splits and parameters of verb position, thus voicing the need to postulate idiosyncratic constraints on functional heads, such as affixal requirements.

References


Focus size in non-prosodically focus-marking languages

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1. Introduction

In intonational focus languages like English, focus is marked by stress, pitch accenting and post-focal deaccenting. In many other languages, however, focus is encoded by a specific syntactic position or a morphological marker, and the focus patterns we see in these languages are often very different from what we are used to in the English cases. In this paper we take a closer look at the different focus configurations in three West African languages: Hausa, Buli and Gürünün. Though the focus marking patterns in these languages are well described, they have thus far not been linked to formal focus semantics theories. We thus propose a model that allows us to formally compute the focus semantics of those languages.

We start from the general observation that the same marking can encode different focus patterns, i.e. the same sentence form is ambiguous regarding the different focus sizes it signals. In English, for example, a nuclear pitch accent on the object can indicate narrow object focus, but also any focus “bigger” than the object, i.e. VP or sentence focus. That the same form can express either a narrow focus or a broader focus is referred to as ‘focus projection’ in the literature (Selkirk 1984, 1995, Rochemont 1986). We will continue to use the terms ‘projection’ and ‘ambiguity’ descriptively throughout this paper, although our theoretical modelling does not use syntactic F-markers and thus knows no ambiguities or projections. The sentence in (1) can be an answer to ‘What did Mary buy a book about?’, ‘What did Mary buy?’, ‘What did Mary do?’, and ‘What happened?’ (small caps indicate prosodic prominence):

(1) Mary bought a book about BATS. (Selkirk 1995:554)

In this paper we show that Hausa, Buli and Gürünün differ significantly from English in the way that focus projection works. One immediate consequence is that none of them...

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