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メタデータ	言語: eng 出版者: 公開日: 2002-09-30 キーワード (Ja): キーワード (En): 作成者: 那須, 紀夫, Nasu, Norio メールアドレス: 所属:
URL	<a href="https://kobe-cufs.repo.nii.ac.jp/records/879">https://kobe-cufs.repo.nii.ac.jp/records/879</a>

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# Negative infinitives and their implications for phrase structure

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## 1. Introduction

A tacit premise underlying various analyses of infinitival constructions is that their internal structure is basically symmetrical with that of finite clauses. *The structural parallelism hypothesis*, as it is called by Wilder (1988), is most explicitly proposed by Koster and May (1982). They argue that finite and non-finite clauses are 'symmetrical with respect to internal phrase structure' (p. 116). A comparison between finite and infinitival clauses appears to suggest this possibility:

- (1) a. It is important that John should leave.
- b. It is important for John to leave.

The modal auxiliary verb *should* and the infinitival marker *to* have a number of syntactic characteristics in common (see Radford 1988 for example). First, they are positioned between the subject and the verbal predicate. Secondly, they take a bare verb complement. Thirdly, they both support VP-ellipsis. Based on this parallelism as well as on the assumption that a modal auxiliary verb occupies the T(ense) position, it is usually considered that the infinitival marker *to* is also positioned in T (Chomsky 1981, Stowell 1982, Pollock 1989, Beukema and den Dikken 1989, among many others).

However, the putative identical distribution of modals and

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\*This paper is a shortened and revised version of chapter 7 section 5 of Nasu (2002). I am grateful to Robert Borsley, Alison Henry, Andrew Radford and Ian Roberts for discussing the relevant issues on various occasions and giving me valuable comments. Needless to say, all remaining errors and inadequacies are mine.

infinitival *to* faces a problem when negation is taken into consideration. Consider:

- (2) a. John should not simply agree to undertake the job.
- b. John should simply not agree to undertake the job.
- c. \*John not should simply agree to undertake the job.

The distribution of negation is restricted in that it never precedes the first auxiliary verb in a finite clause. Given that a finite auxiliary verb occupies T, a possible generalisation is that negation must follow T. This generalisation is at odds with the standard view of infinitival *to*. As illustrated below, negation can precede this category:

- (3) John tried not to undertake the job.

The contrast between (2c) and (3) calls into question the idea that the infinitival marker occupies the same position as a finite auxiliary verb.

This paper attempts to demonstrate that contrary to the widely presupposed view, infinitival *to* does not occupy the T position but a position below TP. Section 2 argues against analyses which derive the *not to* order by lowering the infinitival marker. Section 3 shows that the negative element *not* cannot be a T'-adjunct. Section 4 demonstrates that the *not to/to not* alternation cannot be derived by movement but that it arises from the occurrence of negation in more than one position. The final section summarises and concludes the paper.

## 2. Against *to*-lowering

Analyses have been put forward to reconcile the *not to* order with the structural parallelism hypothesis. Pollock (1989) and Ouhalla (1990), for example, argue that *to* is base-generated in T and that the *not to* order is derived by lowering the infinitival marker across negation. One of the empirical reasons they present as evidence relates to data like the following:

- (4) a. John tried not to undertake the job.
- b. John tried to not undertake the job.

A peculiar trait of negation in an infinitival clause is that the negative element *not* can occur on either side of the infinitival marker.<sup>1</sup> According to Pollock and Ouhalla, (4b) is the original word order and optional *to*-lowering results in (4a).

The *to*-lowering analysis, however, is problematic. First of all, it is not clear where the lowered *to* ends up. Pollock (1989) suggests that it is adjoined to VP. But adjunction of a head like *to* to a phrasal category is generally forbidden (Chomsky 1995). Although this problem is avoided by adjoining *to* to the verb itself as suggested by Ouhalla (1990), such a solution does not seem to be plausible in the light of the following data:

(5) I want you not to always be so sarcastic.

The intervention of an adverb here indicates that *to* is not adjoined to the verb.

Secondly, Pollock (1989) considers *to*-lowering to be a kind of affix movement (Chomsky's (1981) rule R). According to Chomsky (1981) this particular operation is allowed on the condition that it does not leave a trace/copy of the moved affix. However, it must be kept in mind that Chomsky's rule R, whether tenable or not, applies only to affixes. So, the question is whether the infinitival *to* has affixal properties.

As Pullum (1982:185) demonstrates, *to* can be syntactically

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1 The intervention of (an) adverbial expressions including negation between *to* and the infinitival form of a verb has been considered undesirable in traditional/descriptive grammars. Although the so-called *split infinitive* has been attested in the history of English since the thirteenth century (Visser 1966), grammarians used to object to this usage. It is important to note that the *split infinitive* has been criticised mainly because of its stylistic awkwardness. This, however, does not necessarily mean that the *split infinitive* is inconsistent with intuitions of native speakers of English. Grammars such as Poutsma (1929), Jespersen (1954) and Quirk et al. (1985) point out that the *split infinitive* is the only possible option in some cases:

(i) a. An incident had happened early in the opening of the year, which had served to gently strengthen their friendship. (Poutsma 1929:463)

b. I have tried to consciously stop worrying about it. (Quirk and Greenbaum 1972:312)

In these sentences, the *split infinitive* is used to avoid ambiguity. Adverbs like *gently* and *consciously* must be positioned between *to* and the infinitive in order to unambiguously convey the intended meanings of the sentences.

separated from its accompanying verb in various ways. Here are some examples:

- (6) a. McCoy wouldn't like **to**, and he probably wouldn't, become the sort of person that Spock is. (*Right Node Raising*)
- b. Starfleet Command has instructed me to **proceed** without delay, and **proceed** I intend **to**, Mr. Sulu. (*VP-preposing*)
- c. I've never met a Klingon, and I wouldn't want **to**. (*VP-ellipsis*)

Given that a word has lexical integrity and resists syntactic operations which separate the word into parts (Di Sciullo and Williams 1987, Kageyama 1993, Bresnan and Mchombo 1995, among others), the above examples indicate that the infinitival marker does not form a single word with its associated verb. Affixes, on the other hand, exhibit strong lexical integrity with their stems. Since infinitival *to* can stand on its own and is not an affix, the alleged lowering of this item is not an instance of affix movement. This leaves *to*-lowering dubious.

### 3 Negation before *to*

The *not to* order might be compatible with the assumption that *to* is in T if one regards negation before *to* as a T'-adjunct. But this is also problematic. In the first place, negation cannot precede the highest auxiliary verb in a finite clause. Compare (7a, b) and (7c, d):

- (7) a. John tried to not cooperate with the police.
- b. John tried not to cooperate with the police.
- c. John should not simply agree to cooperate with the police.
- d. \*John not should simply agree to cooperate with the police.

This contrast itself may suggest that *not* cannot be adjoined to T' and therefore the infinitival marker is not a T element. This observation is supported by independent evidence.

As is well known, a subset of auxiliary verbs can be realised as phonologically reduced forms, spelled like 've, 'll, 'd and so on. A careful look at these reduced auxiliaries reveals the existence of two types of reduced forms, namely, syllabic and non-syllabic forms, though they are spelled identically. Thus, the reduced form of *have* (spelled as 've) can be syllabic [əv] or non-syllabic [v]. Although syllabic and non-syllabic forms are often regarded as allomorphs, it has been proposed that they should be distinguished from each other (Radford 1988, Spencer 1991, Sadler 1997, etc.). The most conspicuous difference lies in their distribution. While non-syllabic forms show a highly restricted distribution, syllabic forms do not. Consider:

- (8) a. You[l] see it.  
 b. She[d] seen it.  
 c. We[v] seen it. (Spencer 1991:383)
- (9) a. Mary's flu{[əl]/\*[l]} be gone by tomorrow.  
 b. The tree{[əd]/\*[d]} been burnt.  
 c. The foci{[əv]/\*[v]} been changed. (Sadler 1997:1)
- (10) a. John and you{[əl]/\*[l]} be able to go home at two o'clock.  
 b. John and he{[əd]/\*[d]} been sitting in the living-room.  
 c. You and I{[əv]/\*[v]} tried to help her. (Sadler 1997:1)

As illustrated by (9a-c) and (10a-c), ordinary DP subjects and conjoined subjects cannot host non-syllabic forms. Only non-coordinated pronouns can.<sup>2</sup>

According to Zwicky and Pullum (1983), a high degree of selection with respect to hosts is a typical indication of the affixal nature of a reduced form. On this view, non-syllabic forms of auxiliary verbs are affixes rather than simple phonological clitics. This seems to be

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2 It should be noted, however, that not all contracted non-syllabic auxiliaries are subject to this restriction. For instance, non-syllabic forms of *is* and *has* are contracted onto not only pronouns but also full DPs:

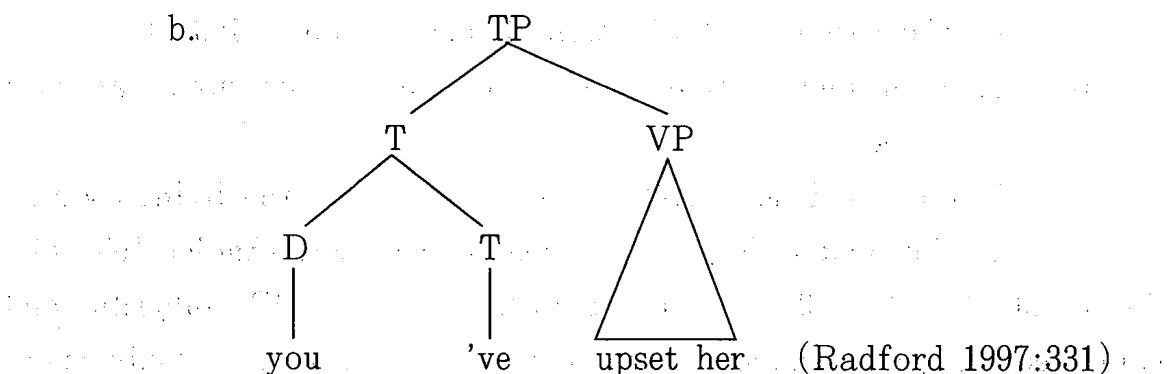
(i) The jug's broken./The jug's been broken.

I shall not be concerned with contracted forms which behave like 's here. See Kaisse (1983), Schachter (1984), among others, for detailed discussions of these items.

justified by the contrast between (8b) and (9b), for example. Although [d] occurs after the vowel [i:] in both cases, only (8b), where [d] is attached to a simple pronoun, is acceptable. If the process of attaching a non-syllabic form to a pronominal subject were purely phonological, non-syllabic forms could be attached to ordinary DP subjects and conjoined subjects. Therefore, it may safely be concluded that the principle governing the selection of hosts is not phonological but morpho-syntactic in the case of non-syllabic forms.

In this connection, Radford (1997) proposes that the affixal nature of a non-syllabic form can be captured by assuming that it is directly adjoined to T and requires another zero-level category to be adjoined to it. The exclusion of phrasal categories is, therefore, ascribed to the prohibition of XP-adjunction to a zero-level category. Non-syllabic forms of auxiliary verbs being affixes, it seems plausible to regard them as manifestations of T in a sentence like (11a):

(11) a. You've upset her.



Since the pronominal subject is adjoined to T,<sup>3</sup> TP does not have a specifier position realised in this structure. Now, if negation could be positioned above T, (12b) below would be grammatical:

(12) a. You've not upset her.

b. \*Not you've upset her.

The contrast here indicates that sentential negation is generally excluded from a position higher than T in English. Viewed in this

3 For the view that simple pronouns are zero level categories, see Abney (1987). See also Postal (1969), Kayne (1975), Cardinaletti (1994), among others, for analyses of pronominal elements in general.

light, negation preceding *to* in (7b) should be placed below TP, which in turn implies that the infinitival marker is not located in T.


#### 4. The immobility of *to*

This section aims at defending the following proposal: The *not to/to not* alternation is not a result of *to*-movement but is attributed to the occurrence of negation in more than one position in a clause. More specifically, the following structure is proposed:

(13) ...[TP T [NegP [Neg' [Neg (not)] [*to*-P *to* [VP (not)V...]]]]].

Yet, there is another way of obtaining the *not to/to not* alternation. Suppose, as Beukema and den Dikken (1989) do, that although *to* is base-generated below TP (as in (13)), the *to not* order is derived via *to*-to-T raising across negation:

(14) ... [TP T [NegP not [*to*-P *to* [VP ...]]]]



This section compares these two possibilities and demonstrates superiority of (13). To this end, it pays attention to syntactic and interpretive characteristics of negation.

##### 4.1 Negation and VP constituency

Although two instances of negation in (15a, b) are treated on a par (Pollock 1989, Beukema and den Dikken 1989, Ouhalla 1990 among others), they do exhibit different behaviour:

(15) a. John will not undertake this job.

b. John tried to not undertake this job.

The most prominent difference is found in relation to VP constituency tests such as VP-ellipsis and VP-preposing. There is fairly general agreement that while syntactic operations are applicable either to heads or to maximal projections, they are not applied to a part of a projection (Chomsky 1986, 1995, Radford 1988, etc.). With this constraint in mind, consider the contrast below:

(16) They said that they would simply agree to undertake the job,  
and ...



- a. ...I'm sure they will \_\_\_.
- b.\*...I'm sure they will simply \_\_\_.

On the view that the adverb *simply* is adjoined to the VP headed by the main verb, the ill-formed (16b) results from deleting a part of the VP. Ernst (1992) argues that the following contrast is accounted for by the same principle:

- (17) a. By three o'clock I will have finished but you will not \_\_\_.
- b.\*By three o'clock I will have finished but you will have not \_\_\_.

Attributing the illegitimacy of *not*-stranding after VP-ellipsis to the constraint discussed above, he argues that *not* in (17b) is VP-adjoined constituent negation. This makes a contrast with sentential negation immediately following the highest auxiliary verb in (17a).

The same observation holds in the following cases:

- (18) a.\*Bill wanted to quietly eat his Cheerios, and George wanted to quietly \_\_\_\_\_, too.
- b.\*Carol told Dan to leave, but Jim told him to not \_\_\_\_\_.

(Ernst 1992:128)

Since deletion of a bar-level projection is generally prohibited, the ungrammaticality of (18a, b) indicates that *quietly* and *not* are both adjoined to the deleted VP. This in turn suggests that negation following the infinitival marker is an adverbial element. The structure (14) cannot predict the contrast between (17a) and (18b), whereas (13) can.

The same conclusion is drawn from VP-preposing. Akmajian, Steele and Wasow (1979) point out that VP-preposing is subject to a stricter constraint to the effect that only a VP headed by the main verb can be preposed:

- (19) They swore that John might have been taking heroin, and...
  - a. ... taking heroin, he might have been \_\_\_.
  - b.\*... been taking heroin, he might have \_\_\_.
  - c.\*... have been taking heroin, he might \_\_\_\_\_.

A possible prediction is that if negation is a part of a VP containing

the main verb, it cannot be stranded after VP-preposing but rather should be preposed together with the VP. This prediction seems to be borne out:

(20) Kathy said she would be not eating spinach, and ...

a. \*... eating spinach, she will be not \_\_.

b. ... not eating spinach, she will be \_\_. (Ernst 1992:118)

The contrast in (20a, b) indicates that *not* following a non-finite form of an auxiliary is constituent negation adjoined to the minimal VP.

If negation in the *to not* order is also constituent negation, a contrast similar to (20a, b) should emerge with respect to VP-preposing in the infinitival construction. VP-preposing from an infinitival clause seems to be acceptable (see Rizzi 1990, Koopman 1994, etc.), whereas VP-preposing is impossible when the infinitival clause exhibits *to not* order:<sup>4</sup>

(21) ?... and fix the car he certainly tried to \_\_.

(adapted from Rizzi 1990:33)

(22) \*John said he would not drink too much, and drink too much, he tried to not \_\_.

This means that negation in the infinitival clause belongs to the preposed VP.<sup>5</sup> (22) exhibits a sharp contrast with VP-preposing in a finite clause, where *not* can be stranded:

(23) John seems to be reluctant to cooperate with the police, and cooperate with the police, he certainly will not.

It follows from the discussion so far that negation in the *to not* order is an instance of VP-adjoined constituent negation, whereas negation in (23) is more appropriately considered to be a sentential negation

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4 Since VP-preposing is in itself a marked operation (especially when a VP in an embedded clause is moved to the beginning of the matrix clause), the resulting sentence tends to be awkward. Nevertheless, (21) is still better than (22).

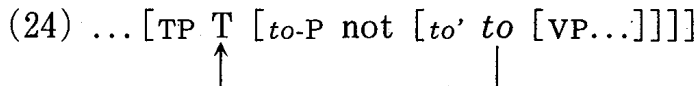
5 In fact, the sentence becomes better if the preposed VP contains negation, though it is still awkward presumably for the reason discussed above:

(i) ?John said he would not drink too much, and not drink too much, he tried to.

heading NegP. As in the case of VP-ellipsis, this is unpredictable in the analysis where negation is assigned only one position.

#### 4.2 Negation and interpretive difference

Although (14) is problematic, one might say that the *to*-raising analysis is still sustainable by supposing that negation in (14) is adjunction to *to*-P rather than the head of NegP:



This structure can indeed account for why *to*-stranding results in ungrammaticality in (18b) and (22).<sup>6</sup> Nevertheless, *to*-raising is falsified by another piece of independent evidence.

There is an interpretive property unique to negation adjoined to VP. Andrew Radford (p.c.) has informed me that different orders between *to* and *not* sometimes induce different interpretations:

- (25) a. John decided not to cooperate with the police.  
 b. John decided to not cooperate with the police.

(25a) denotes a situation in which John made a negative decision on the matter in question. On the other hand, (25b) implies not only making a negative decision but also a deliberate act of defiance.

The antonymic usage of negation of this kind seems to be unique to constituent negation. Higginbotham (1983) points out, in his discussion of negation with a bare infinitival construction as in (26a), that negation in this sentence cannot be regarded as sentential negation but must be interpreted as being synonymous with (26b):

- (26) a. John sees Mary not leave.  
 b. John sees Mary stay.

Furthermore, he observes that (26a) may have an implication that Mary has some deliberate and premeditated plot. Thus, a possible generalisation might be that the implication of 'defiance' or 'deliber-

<sup>6</sup> In order to capture finite-infinitive contrast with respect to *not*-stranding, one has to make an auxiliary hypothesis that while negation in an infinitival clause is an adjunct, *not* directly following a finite auxiliary verb is the head of NegP.

ate action' is attributable to negation adjoined to a predicative projection. The *to*-raising analysis, however, cannot capture the interpretive difference between *not to* and *to not* orders. Since it postulates a single position for *not*, it fails to account for why the relevant interpretive difference emerges. It seems much less plausible to ascribe the relevant difference to the process of *to*-raising.

## 5. Summary

This paper addressed the question of exactly which position the infinitival marker occupies in a clause. It paid particular attention to the *not to/to not* alternation and attempted to defend the following view: The infinitival marker occupies a position between TP and VP and stays there throughout the derivation. To demonstrate this point, this paper first presented arguments against the *to*-lowering analysis of the *not to* order (section 2). Secondly, it was shown that the negative marker *not* cannot be located in a position higher than T (section 3). Thirdly, syntactic tests of constituency such as VP-ellipsis and VP-preposing provide evidence for the view that the *not to/to not* alternation cannot be derived via movement but should be ascribed to the occurrence of negation in more than one position in a phrase structure. Finally the denial of any syntactic movement of the infinitival marker is further supported by interpretive differences between the *not to* order and the *to not* order (section 4).

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