

Do so* replacement and the argument/adjunct distinction in Merge-based syntax

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Abstract

This study provides a novel look at *do so* replacement within the framework of the Bare Phrase Structure theory. Unlike the previous view of *do so* as a monolithic VP anaphor, I argue that *do so* is better analyzed as *do* and *so*, separately substituting for a functional Voice head and VP, respectively. This argument is supported by the observation of VP adverbs, the locative/directional interpretation of PPs, and the analysis of voice mismatch. The study consequently presents a more refined model of VP than the previous X-bar theoretic model, as it fulfills the structural requirement between complements and adjuncts.

Keywords: *do so*, Merge, locative/directional PPs, voice mismatch

1. Introduction

This study proposes a Merge-based account of *do so* replacement in English. *Do so* replacement was extensively explored in the era of X-bar theory, but it needs to be re-examined to conform to a more up-to-date theoretical context of the minimalist syntax, especially called Bare Phrase Structure (BPS) theory (Chomsky 1995, 2000). Among the issues in the BPS system, it seems theoretically controversial and thus worth discussing how adjuncts are adjoined to the binary structure and differentiated from complements in the Merge-based syntactic derivation.¹ Since *do so* replacement inevitably involves the issue of the structural distinction between complements and adjuncts, analyzing what is replaced by *do so* will lead

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¹ In Fukui and Narita (2014), a number of important problems are listed for the future research of BPS theory. Adjunction is one such open issue, and various approaches based on pair-Merge, late-Merge, and antisymmetry are suggested for reconsideration whereby modifiers are allowed to be optionally adjoined to the modified constituents.

us not only to refine the structure of VP built by Merge, but also to uncover the essential nature of Merge in the BPS framework.

The paper is structured as follows: Section 2 briefly reviews the essential data of *do so* replacement and points out some structural shortcomings of the X-bar schema for the argument/adjunct distinction in VP. In Section 3, I demonstrate how Merge is driven by uninterpretable features and then propose that *do* and *so* independently substitute for a Voice head and VP, respectively. In Section 4, this proposal is tested by analyzing the voice mismatch between *do so* and its antecedent. Finally, Section 5 summarizes our findings and concludes the paper with an outline for future research.

2. What does *do so* replace?

2.1. *Do so* replacing overt verbal phrases

First, let us consider some generally accepted views of the relationship between *do so* and its verbal antecedent. A pivotal study by Hankamer and Sag (1976) discovered that *do so* requires an overt antecedent, while *do it* does not. The antecedent for *do so* and *do it* in (1), *stuff this ball through a 6-inch hoop*, appears overtly. In contrast, the antecedent of *do it* in (2a) can be pragmatically recoverable from the context, while that of *do so* in (2b) cannot. This difference in contextual recoverability clearly indicates that, unlike *do it*, *do so* must be strictly and syntactically controlled by the presence of its overt antecedent.

- (1) A: I'm going to stuff this ball through a 6-inch hoop.
B: I don't believe that you can {do so / do it}.

Fu et al. (2001: 570)

- (2)
a. [Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop]
Sag: It's not clear that you'll be able to do it.
b. [Hankamer again attempting to pass 12" ball through 6" hoop]
Sag: #I don't think you can do so.

Hankamer and Sag (1976: 392, 418)

In addition to overtness, *do so* is known to require its antecedent to be larger than a single V. The contrast between (3a, b) and (3c) shows that *did so* can substitute for verbal phrases *gave a speech* and *gave a speech on the 30th of June*, but not for the past verb *gave* itself. This leads us to a generalization that when the antecedent is targeted for *do so* replacement, it should be a verbal constituent including at least a verb's complement like *gave plus a speech* in (3).

- (3) John gave a speech on the 30th of June in Madrid, and...
a. Mary did so in Valencia.
b. Mary did so on the 27th of September in Valencia.
c. *Mary did so a statement later that day.

Poole (2011: 41)

The next example (4) may appear to be a counterexample to the claim that a verb itself cannot be replaceable. However, if we follow Boeckx and Stjepanović (2001), who argue for the PF analysis of head movement on the basis of pseudogapping constructions like (4), *did the cookies* should be better treated as a remnant object moving out of the VP-ellipsis site rather than *did* directly replacing *ate*.²

(4) Debbie ate the chocolate, and Kazuko did the cookies.

Boeckx and Stjepanović (2001: 346)

The apparent contrast between ungrammatical *did so* in (3c) and grammatical *did* in (4) is not due to the different anaphoric nature of *do so* and *do*, but supposedly due to the underlying mechanism of *do so* replacement and VP-ellipsis. This argument leads us to the following question: As distinct from VP-ellipsis, what makes *do so* unable to target a single V for replacement? Although it is beyond the scope of this study to discuss this in detail, I will leave it as an important open question for future investigation.

2.2. X-bar theoretic account

Do so can substitute for a verbal constituent, but whether the antecedent can be replaced by *do so* or not seems to depend on the property of verbs within the targeted constituent. For example, even though both (5a) and (5b) have the same V-DP-PP sequence in the first conjunct (i.e., *read a book in the attic* and *put a book on the table*), *did so* in (5a) can replace a sequence of V plus DP, *read a book*, while *did so* in (5b) cannot substitute for the categorically identical sequence of V plus DP, *put a book*. As (5c) shows, (5b) becomes grammatical if *did so* refers to a broader sequence of its antecedent including a PP, *put a book on the table*. To account for the contrast regarding the types of preceding verb, we need to structurally distinguish two positions for PPs: one for adjunct PPs, which can be exempt from *do so* replacement, and the other for complement PPs, which are necessarily part of the replaced constituent.

(5)

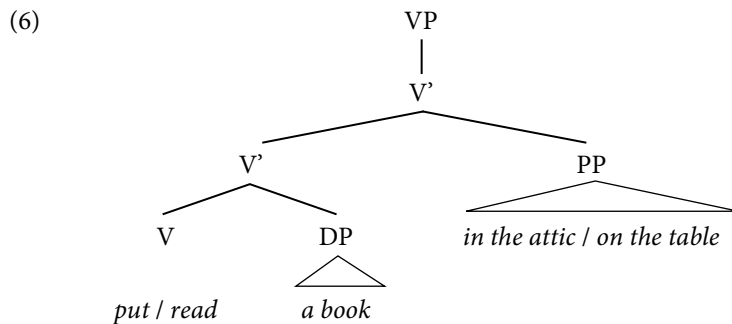
- a. Mary read a book in the attic, and John did so in the garden.
- b. *Mary put a book on the table, and John did so on the floor.
- c. Mary put a book on the table, and John did so, too.

² Based on Lasnik's (1999) analysis, Boeckx and Stjepanović point out that Object Shift must apply and then the remnant VP is elided in pseudogapping constructions, while both Object Shift and the head movement of V apply necessarily in the standard VO order. Each of the examples with bracketed derivational steps is shown in (i-a) and (b), respectively.

- (i) Debbie ate the chocolate, and ...
- a. Kazuko did [the cookies [_{VP} ate *t*]] (= (4))
- b. Kazuko [drank_V [milk_i [_{VP} *t*_V *t*_i]]]

They conclude that after Object Shift applies in overt syntax, VP-ellipsis and V-raising apply as PF operations, which compete with each other (i.e., either of them selectively takes place, not both) to yield either pseudogapping or VO-ordered sentences.

One solution proposed in X-bar theory was to replace a V-bar (V') with *do so* under the assumption that VPs are uniformly analyzed to have a structure similar to (6).



The crucial problem of assuming the X-bar structure above is that this structure does not provide any reason why (5a) and (5c) are grammatical but (5b) must be ruled out. Moreover, the current BPS theory presumes that it is desirable to eliminate the X-bar component of Universal Grammar (UG) and reduce structure building to the operation Merge.³ The X-bar approach assumes that adjuncts in English are base-generated adjacent to the right of V' or VP.

Another problem is, as previously argued by Larson (1988) and Pesetsky (1995), the approach outlined above cannot account for essential c-command relations between the adjuncts and the complements of the verb. Typical diagnostics include negative polarity item (NPI) licensing and quantifier-bound pronouns in (7). For example, (7a) shows the licensing of an NPI *any* by the preceding negative element *no* in a higher position. Each of the tested examples in (7) indicates that adjuncts are c-commanded by the postverbal complements.⁴

- (7)
- a. John saw *no* student in *any* classroom. Negative polarity items
- b. John visited *everyone_i* on *his_i* birthday. Quantifier-bound pronouns

The c-command relation between the arguments and adjuncts holds in the structure derived via obligatory movements to satisfy featural requirements rather than optional movements

³ For example, Chomsky (1995: 209) proposes that syntactic computations should conform to the Inclusiveness Condition, which states that no new features can be added in the course of the derivation and only the items from the numeration can be used. Bar-levels as well as X⁰- and XP-levels are merely theory-internal distinctions within X-bar theory. Since they cannot be construed as intrinsic features of any items from the numeration, such intermediate levels are considered to be abandoned for the structure-building in the BPS framework.

⁴ You may wonder if quantifier raising enables the quantified objects to c-command adjuncts with licensed/bound expressions even in the X-bar structure of VP like (6). This option, however, does not seem plausible. Quantified phrases such as *no linguist/conference room* covertly adjoin to TP, and if they licensed *any conference room/linguist* by c-commanding the domain containing them at LF, both (ii-a) and (b) would be grammatical. Since (ii-b) is eventually ruled out, I do not adopt the c-command relation at LF to account for the structural distinction between arguments and adjuncts.

(ii)

- a. John spoke to Mary about *no linguist* in *any conference room*.
- b. *John spoke to Mary about *any linguist* in *no conference room*. (Cinque 2006: 141)

afterwards such as stylistic fronting. This is suggested by the contrast between the acceptable and ungrammatical results of pronominal binding in (8) and (9). In (8), the embedded subject *two men* is ECMed due to *v*'s EPP feature and ϕ -valuation, and behaves like an object of *prove* to bind *each other* in the matrix adjunct.

(8)

- a. The DA proved two men to have been at the scene of the crime during each other's trial.
- b. *The DA proved there to have been two men at the scene of the crime during each other's trial.

Lasnik (1999)

(9) shows the case of optional movements. Unlike (9a), the fronted PP *near Dan* in (9b) cannot refer to *he* from its landing site even though it appears to be controlling its referent within the root sentence.

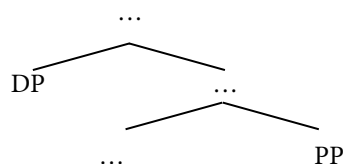
(9)

- a. Near him_i, Dan_i saw a snake t.
- b. *Near Dan_i, he_i saw a snake t.

Reinhart (1981)

Since the syntactic relations between complements and adjuncts cannot be properly analyzed or guaranteed in the X'-based VP structure in (6), an alternative VP structure must be considered along the lines of Larson's (1988) proposal, in which adjuncts are embedded more deeply below the complements of verbs. In other words, putting aside some details of categorial information, (10) can be a more promising VP format than (6) with respect to the c-command relation between higher complements and lower adjuncts.

(10)



3. Merge-based analysis of *do so*

3.1. Merge as a feature-matching operation

In order to identify the internal structure of VP fulfilling the structural requirement observed so far, let us begin by closely observing the transitive location verbs such as *put* and *smear*. These verbs are known to be three-place predicates: *put* and *smear* take one external AGENT, and two internal THEME and LOCATION arguments. As required by such argument specification exemplified in (11), a sentence (or a clause) whose core predicate is *put* or *smear* must have all the three arguments present. Otherwise, lacking any one of required arguments makes the sentence/clause ungrammatical, as shown in (12).

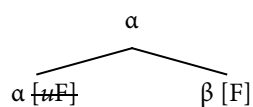
- (11) *put, smear, etc.*: <1, 2, 3> (AGENT (THEME (LOCATION)))

(12)

- a. *There put a book on the table. $\langle \emptyset_{AG}, 2_{TH}, 3_{LOC} \rangle$
 b. *Mary put on the table. $\langle 1_{AG}, \emptyset_{TH}, 3_{LOC} \rangle$
 c. *Mary put a book. $\langle 1_{AG}, 2_{TH}, \emptyset_{LOC} \rangle$

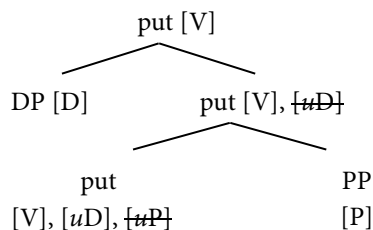
Then, let us consider how Merge applies to form a VP with all *V*'s required arguments fulfilled. Merge occurs when there is a syntactic object (SO) carrying an uninterpretable feature [*uF*] that needs to be satisfied. Suppose that there are an SO α carrying [*uF*] and another SO β carrying a relevant feature [*F*]. By merging two SOs α and β into a new SO γ , the α 's [*uF*] matches the β 's [*F*] and then it becomes deleted, otherwise the undeleted [*uF*] causes the derivation to crash. The feature-matching model of Merge described so far is graphically summarized in (13), where α projects for a new SO as a result of feature-matching.

(13)



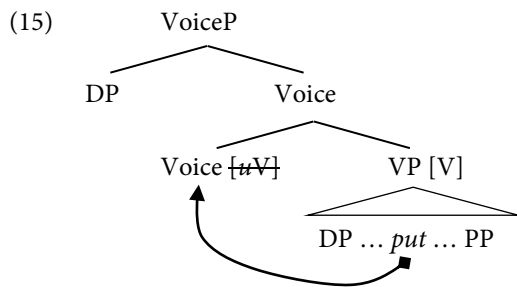
It follows from the above view of Merge as a feature-matching operation that if there is more than one uninterpretable feature, which is actually the driving force of Merge, Merge must apply more than once. Since *put* and *smear* require to take two internal arguments (THEME and LOCATION), suppose that they carry uninterpretable D- and P-features (coded as [*uD*] and [*uP*]). (14) demonstrates how Merge proceeds step-by-step to form a VP like *put a book on the table*: the first Merge is driven by the [*uP*] of *put* to match the [*P*] of a PP *on the table*, and then the second Merge takes place in turn to match the unchecked [*uD*] of *put* and the [*D*] of a DP *a book*.

(14)



3.2. Do so and VoiceP

Now that all the internal arguments are fulfilled by Merge, the external AGENT argument is then introduced to the structure by merging VP and a Voice head, which is responsible for specifying the voice for a state/event as active, passive, or middle. Suppose the following three properties of Voice: (i) Voice has an uninterpretable V-feature [*uV*] to be matched/deleted, (ii) a Voice head is affixal, and (iii) the Voice in (15) is valued as active. Since an affixal head itself cannot stand independently without being supported by some other independent morphemes, verbs such as *put* and *smear* raise from VP to Voice to be a verbal host of the Voice affix. As a result, we have obtained all the necessary external and internal arguments in the right order: there are an AGENT DP and the verb within VoiceP, and the THEME DP and LOCATION PP within VP.



Then, what structure, or which constituent, does *do so* substitute for within the VoiceP in (15) above? Instead of dealing with *do so* as a monolithic verbal proform, it seems to be structurally well-grounded to analyze *do* and *so* separately for the following two observable reasons: (i) the placement of VP-adverbs, and (ii) *do so* can be characterized by its own voice.

If *do so* is better analyzed as a separated realization of a higher Voice head and a lower VP instead of having a rigid, monolithic structure, it is theoretically predicted that VP-adverbs can intervene between *do* and *so* to modify an event substituted by *do so*. This prediction is quite consistent with the following samples of VP-adverbs obtained from the web: (16) shows that *do so* can be intervened by VP-adverbs such as *amazingly*, *gracefully*, and *reluctantly*.⁵

(16)

- a. The way it handles open-wide exploration – which it does *amazingly* so – has blinded many people to its faults I think.
- b. Now my Lady I humbly suggest you take a look at the video I posted, here is a woman that lets herself expose to the 3D, and in my opinion does *gracefully* so, maintaining her energy of unconditional love.
- c. “Okay,” Patton says, urging Virgil to let go of him and he does *reluctantly* so.

(The data obtained from the web; italics added)

Turning now to voice characterization, in (17), for example, *do so* appears in active voice (*done so* and *doing so* substituting for *contacted Mary* and *discussing the issue*, respectively), even though the antecedent is in passive voice (*Mary was discussed* and *the issue had been discussed*).

(17)

- a. Mary was contacted by the same man in Boston who had *done so* in New York.
- b. Because the issue had been discussed so thoroughly in our committee that afternoon, we were asked not to waste time *doing so* again that night.

Bouton (1969, cited in Bruening 2018)

Here, another question arises as to the structural analysis of other VPs: how is a VP formed if it is headed by other types of transitive verbs like *read* and *write*? These verbs are two-place predicates (i.e., predicates that require both AGENT and THEME arguments), so unlike locative transitive verbs like *put* and *smear*, they do not have to take locative PPs (e.g., *in the*

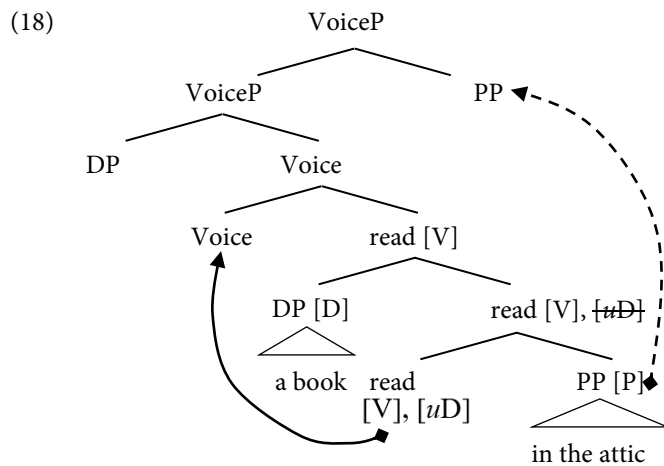
⁵ I would like to thank Prof. Marcel den Dikken for bringing the position of VP-adverbs to my attention. Each sample in (16) is cited from several sites, accessed on May 30, 2022, whose URLs are listed as follows:

(a) <https://forums.escapistmagazine.com/threads/why-is-zelda-botw-considered-so-amazing.142156/>

(b) <https://aishanorth.wordpress.com/2013/09/10/the-manuscript-of-survival-part-352/>

(c) <https://www.wattpad.com/520999871-spicy-sanders-sides-one-shots-do-you-think-i-look>

attic) to satisfy their argument specification. (18) is the VoiceP structure I would like to propose in order to analyze the verbal constituent *read a book in the attic*.



Although Merge is considered to apply freely to combine any two SOs (Chomsky 2004, 2015), in (18) *read* first takes the adjunct PP, and then it successively takes the required THEME argument to match and delete its uninterpretable D-feature. By doing so, a proper c-command relation is guaranteed between the higher complement DP and lower adjunct PP within VP. When the derivation proceeds and Voice merges VP to form VoiceP, a head movement of *read* takes place to host an affixal Voice head, as mentioned in (15). Since Voice in the above case is valued active, an AGENT DP is then externally merged to project VoiceP.⁶

I would also like to assume an optional movement of the VP-internal adjunct PP to the higher VoiceP-domain (signified as a dotted arrow in (18)). This movement allows *do so* replacement to target verbal antecedents in different sizes. For example, when the PP *in the attic* moves out of VP to adjoin to VoiceP, the target of *do so* can be narrowed down from the full VP *read a book in the attic* to its subpart *read a book* only, since the moved PP becomes invisible for *do so* to search for as its target within VP-domain. This evacuation from VP to the higher domain, however, cannot be applied to a complement PP (e.g., *put a book* [_{PP} *on the table*]). Since VP is transferred at the completion of a *v*-phase, I assume that the structural relations to check V's uninterpretable features within VP are preserved and transmitted to the phonological/semantic interfaces for further computation.⁷

⁶ A reviewer pointed out the *do so* replacement including temporal adverbials such as *in the morning* such as *Mary will cook the potatoes in the morning, and Susan will do so, too*. The *do so* data presented throughout this paper are limited to event-related because I believe the complement/adjunct distinction in Neo-Davidsonian event semantics to be consistent with my structural analysis of complement/adjunct PPs. The above issue of course will be explored in the future research as well as how event modification by tense and temporal adverbials is framed in Neo-Davidsonian semantics.

⁷ A reviewer wonders why a complement PP does not merge VoiceP optionally. An anaphoric contrast in (iii) shows that complement PPs fall within the same binding domain as objects while adjunct PPs do not.

(iii)

- a. John put Bill_i in front of a picture of himself_i.
- b. ??John met Larry_i in front of a statue of himself_i. (Hestvik 1991: 463, 465)

I assume for the time being that the former are kept connected to the VP-domain due to the [_uP] feature of V.

3.3. Two positions for PPs

This optional-movement analysis of adjunct PPs to VoiceP is supported by and closely related to some recent views of the interpretation of PPs. One of the latest studies of PPs in line with our purpose here is Milway (2015), who analyzed Locative and Directional interpretation of PPs in multiple VP-layers. For example, (19) is interpreted ambiguously: in the locative interpretation, the PP *behind the screen* means that Jamie was behind the screen, and he ran there. In the directional interpretation, on the other hand, the same PP implies that at first Jamie was somewhere else, and then he ran towards back of the screen.

- (19) Jamie ran behind the screen. Locative/Directional
Milway (2015: 10)

However, when *behind the screen* is fronted as in (20), the interpretation is fixed to locative, not directional. This fact suggests that the interpretation of PPs can be affected and restricted by structural height of PPs.

- (20) Behind the building, Andrew dances
 ... but in front of it, he stands perfectly still. Locative/*Directional
Milway (2015: 12)

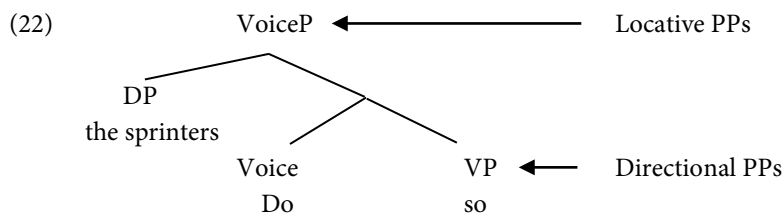
Then, let us observe how PPs are interpreted when they modify *do so*. In (21), the PP *on the track* modifies *do so*, and it is interpreted as locative, rather than directional. *Did so on the track* can actually be interpreted ambiguously as either (a) or (b), but in both interpretations, the PP *on the track* modifying *do so* is interpreted as locative. In addition to PP-fronting in (20), this locative-oriented interpretation of PPs also indicates that locative PPs are structurally higher than directional PPs. Based on Milway's proposal summarized in (22), I assume that the PPs exempt from *do so* replacement are adjoined to VoiceP, while the PPs replaced by *do so* are within VP.⁸

- (21) The soccer players ran between the nets and the sprinters did so on the track.
 a. ... ran [_{loc} between the nets] and ... ran [_{loc} on the track]
 b. ... ran [_{dir} between the nets] and ... ran [_{dir} between the nets] [_{loc} on the track]
Milway (2015: 14)

⁸ As cited in Cinque (2010: 15–16, fn. 12), Stringer's (2006) examples of locative PPs moving out of the VP domain indicate that locative PPs consist of a layered structure with higher functional PATH and lower lexical PLACE heads. Based on the layered PP structure exemplified in (i), Stringer points out that a directional reading of locative PPs such as *on the pitch* in (ii) becomes impossible when the PPs are moved to a higher, focused position, as shown in (iii).

- (i) jump [_{PathPP} from [_{PlacePP} in [_{LocNP} front [_{PP} of [_{DP} the train]]]]]
 (ii) Zidane ran *on the pitch*. Locative/Directional
 (iii) It was *on the pitch* that Zidane ran. Locative/*Directional

The lack of directional reading in (iii) is due to a covert PathP being unable to be licensed under the surface adjacency to the verb (*ran*, in this case).



Milway (2015: 13)

My proposal is summarized in (23). Since *do so* can have its own voice different from the voice of the antecedent, I analyze *do* independently as a pro-Voice head, and *so* as a pro-VP. Once the internal arguments required by verbs and the adjuncts modifying them are merged to maintain the c-command relation within VP, the adjuncts can internally merge VoiceP, just like *in the attic* in (23b). By doing so, PPs can escape from the target VP domain of *so*-substitution, and the PPs modifying *do so* from VoiceP can get interpreted as locative.

- (23)
- a. [VoiceP Mary [Voice+ put [VP a book [~~put~~ on the table]]]]
 | do | so |
- b. [VoiceP Mary [Voice+read [VP a book [~~read in the attic~~]]] in the attic]
 | do | so |

4. *Do so* and Voice Mismatch

Lastly, let us consider another case of voice mismatch between *do so* and its antecedent to see if my analysis can account for it. The examples (24) show the contrast of active-middle alternation: the antecedent of *do so* in (a), *melted the glass*, seems to be replaceable with the middle voice sentence *it would do so*, which stands for “the glass would melt,” while in (b) such active-middle alternation is not possible between the active VP *killed Mary* and the middle counterpart *she did so*, which is intended to mean “Mary died”. (24a) used to be accounted for by assuming the lexical semantic structure of causation like (24), CAUSE X TO DO SOMETHING. However, it was proven to be problematic because it could not explain why only the middle interpretation of (*she*) *did so* in (24b) is ruled out if *melt* and *kill* can be equally characterized with the same semantic structure as in (25).

- (24)
- a. Floyd melted the glass though it surprised me that {he / it} would do so.
 = Floyd would melt the glass / the glass would melt
- b. John killed Mary, and it surprised me that {he /*she} did so.
 = John killed Mary / *Mary died

Foder (1970: 429), Dowty (1979: 240)

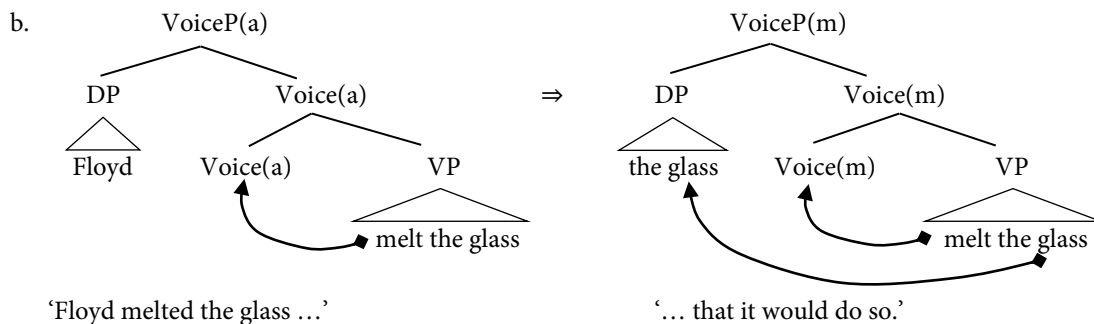
- (25) melt / kill : CAUSE X to melt / die

Alternatively, my analysis starts with identifying the argument specification of verbs. Take *melt* in (24a), for example. *Melt* is an unaccusative verb and, as specified in (26a), it only needs one internal THEME argument. The derivation proceeds as (26b) shows: *melt* Merges a

DP *the glass* in order to get its uninterpretable D-feature [*u*D] checked within VP. Then, a Voice head Merges the VP. Since this Voice head is valued as active, it takes *Floyd* as the subject by external Merge, and then the VoiceP projects. When *do so* replacement applies, *so* refers to the antecedent VP *melt the glass*. Since the Voice head for *do so* can be valued independently of the Voice value for the antecedent, in the right structure it is valued as middle, in other words, non-causative. The middle Voice head triggers the internal Merge of *the glass* from the pro-VP domain to the subject position in VoiceP. As a result, we have *the glass* in VoiceP, a middle Voice head incorporated with *melt*, and a VP below them, each of which corresponds to *it*, *do*, and *so*, respectively.

(26)

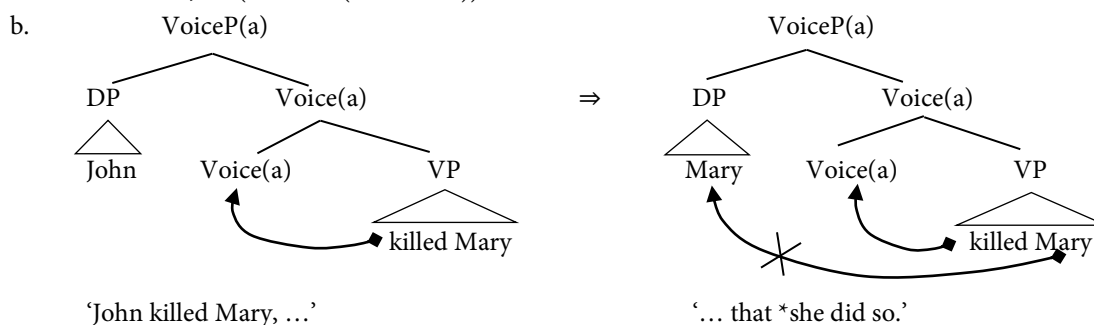
a. melt: <2> (THEME)



On the other hand, the same does not apply to another example, *John killed Mary* in (24b). As (27a) shows, *kill* needs one external AGENT argument and another internal PATIENT argument. Since *kill* needs an AGENT argument as its subject, the Voice must be valued as active to have the agentive subject by external Merge. When *do so* replacement is applied, the antecedent VP, *kill Mary*, must be referred to by *so*, but the Voice for *do so* should be active in order for the external AGENT argument of *kill* to be fulfilled by external Merge, not by internal Merge of *Mary* from inside the embedded VP.

(27)

a. kill: <1, 2> (AGENT (PATIENT))



5. Conclusion

In this paper, I have argued that unlike the previous treatment of *do so* as a monolithic VP anaphor, *do so* is better analyzed as a structural compound of separate *do* and *so*. Let us review some main points to summarize the above discussion. As for the transition from the X-bar to

BPS theory, the first problem I pointed out was that the c-command relation between the complements and adjuncts is not maintained in the X'-based VP model. Then, in order to overcome this structural inadequacy, I proposed the VoiceP structure embedding a VP based on the observation of VP-adverbs and voice characterization of *do so* and its antecedent. *Do* is a morpo-phonological realization of Voice head, and *so* substitutes for VP. Adjuncts in VP can be internally Merged up to VoiceP to become exempt from the targeted domain of *do so* replacement and get interpreted as locative. Finally, two cases of voice mismatch with *melt* and *kill* were examined to test my proposal.

Important tasks to be explored for future research include comparing the underlying syntax of *do so* replacement and VP-ellipsis. As mentioned in Section 2.1, *do so* differs from pseudogapping in that it basically cannot target a single V for replacement. However, there are in fact several examples where *do so* appears to substitute for V, including Milway's (2015) example (21a) observed in Section 3.3. Another topic is to see to what extent my proposal of *do so* replacement can be similarly applied to other kinds of proforms such as *one* substitution. Investigating these further issues will contribute to a more extensive, clarified picture of VP/NP structures and related anaphoric phenomena.

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