

A Categorial Distinction between Stative and Eventive Verbs

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1. Introduction

The central claim of this paper is that the lexical item *so* as it occurs in (1a) and (1b) is the same lexical item with the same function in both cases. The fact that *so*-insertion strands the stative verb in (1b) but not the eventive verb in (1a) (necessitating the occurrence of *do* in that case) points to a difference in the distribution of stative and eventive verbs. I claim that stative verbs are generated directly in little-*v* while eventive verbs are generated in big-*V*.

- (1) a. Alistair filed a report and Ingrid did so, too.
b. Alistair believes that Theo filed a report, and Ingrid believes so, too.

2. On the Syntax of *Do So*¹

The subject clause *what Alistair didn't do* in (2a) is identical to (2b) except for the presence of *what* and the (obligatory) absence of *so*, indicating that *what* and *so* are in complementary distribution, and therefore share a syntactic position at some level, and hence a syntactic category. The dummy auxiliary *do* co-occurs here with the *do* of *do so*, indicating that the *do* of *do so* is a distinct lexical item from the dummy auxiliary; they have distinct distributions (Déchaine 1994).

- (2) a. What Alistair didn't do (**so*) was file a report.
b. Alistair didn't do *(*so*).

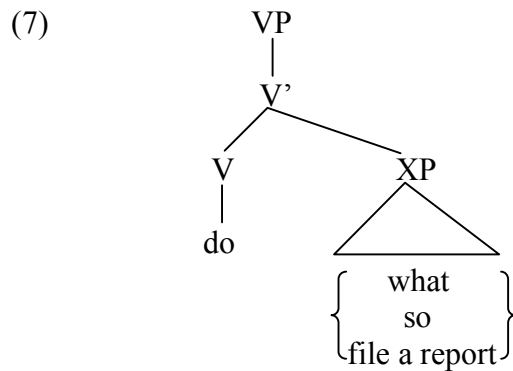
¹ This section summarizes the analysis of *do so* presented in Hallman (2004), to set the stage for the analysis of *believe so* that follows. Since that publication it has come to my attention that Stroik (2001) reaches the same conclusions about *do so* based on an investigation of the morphological behavior of *do* in *do so* and in pseudoclefts.

The pairs in (3)-(5) indicate that generally in pseudoclefts, the portion that follows the copula is interchangeable with the *wh*-chain, and therefore also shares a syntactic category with it, which is the category of *so*.

- (3) a. What_i Ingrid asked for *t_i* was a new chair.
b. Ingrid asked for a new chair.
- (4) a. What_i Ingrid is *t_i* is clever.
b. Ingrid is clever.
- (5) a. What_i *t_i* was unexpected was that Ingrid got a whole new office.
b. That Ingrid got a whole new office was unexpected.

From this observation it in turn follows that the post-copular VP in (2a) shares the category of *so* (designated α in (6)). We expect them then to be interchangeable (6a,c). The fact that they are not ((6c) cannot be uttered as such) does not falsify this conclusion if some process is at work hiding *do* when adjacent to the main verb, as Ross (1972) claims. With this caveat, the data above implicate that the structure in (7) underlies the three construction types shown in (6).

- (6) a. Alistair didn't do so_α .
b. What _{α} Alistair didn't do *t _{α}* was [file a report] _{α}
c. Alistair didn't do [file a report] _{α}



Do so is ungrammatical in the context of material that bears a movement relation to any position in the constituent represented by *so* (Hallman 2004), whether A (8a) or A-bar (8b,c) movement.

- (8) a. *Alistair was arrested and Ingrid was done so, too.
b. *Alistair hit every target that Ingrid did so.
c. *I know which sonatas Alistair played, but I wonder which ones Ingrid did so?

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Yet *do so* may occur with an external argument (1a), suggesting that the external argument does not bear a movement relation to any position in the constituent represented by *so*.

So-replacement subsumes that portion of the predicate that contains the verb and its internal arguments, and excludes that portion of the predicate that introduces the external argument, i.e. VoiceP (Kratzer 1996) or ‘little-vP’ (Chomsky 1995). Chomsky labels the complement of little-v, which contains the verb and its internal arguments, ‘big-VP’. *So* is a pro-big-VP.

Do occurs as a main verb in pseudoclefts, where big-VP is syntactically dissociated from *do* (it follows the copula, while *do* precedes), and in the expression *do so*, where big-VP is replaced by *so*. These two contexts have in common that the verb and *do* are unable to interact morphologically, because of lack of locality (pseudoclefts) or because the verb is altogether not present (*do so*). This behavior is suggestive of a ‘last resort’ dependency: *do* occurs precisely when big-V is unable to morphologically fuse with little-v. Chomsky (1995) argues that big-V raises overtly to little-v in English (pg. 315), which attributes to little-v the status of verbal affix in need of a morphological host. *Do* behaves as a pleonastic little-v, surfacing whenever raising of big-V to little-v is blocked, as in pseudoclefts and *do so*. This analysis makes *do* in *do so* functionally parallel to dummy auxiliary *do*, which serves as a pleonastic host for a stranded tense affix. There is, then, only one pleonastic *do* in English, which surfaces either in T or in little-v under the conditions specified in (9), where \mathcal{P} is the pronunciation function and $X^0 = v$ or T. (9a) is the elsewhere case.

$$(9) \quad \begin{array}{l} \text{a. } \mathcal{P}(X^0) = /du/ \\ \text{b. } \mathcal{P} \left(\begin{array}{c} X^0 \\ \swarrow \quad \searrow \\ Y^0 \quad X^0 \end{array} \right) = \mathcal{P}(Y^0) \end{array}$$

This analysis relates *do so* and pseudoclefts, specifies the function and category of *so* in *do so*, and reduces the role of *do* in *do so* to a role that *do* plays elsewhere in English, that of pleonastic placeholder. However, the analysis does not obviously extend to a superficially similar use of *so* as a post-verbal pro-element in expressions like *believe so*, *think so*, etc. In such cases, *so* does not subsume the main verb; it does not seem to strand little-v. The following section treats these cases in detail, and shows that contrary to the apparent dissimilarity, *so* has the same function and distribution in *believe so* as in *do so*.

3. On the Syntax of *Believe So*

So may appear with stative propositional complement verbs, such as *believe*, *know*, *suppose*, *assume*, *think*, *figure*, *guess*, *gather*, *suspect*, *understand*, *feel*, *hear*, *sense*, and others. Ross (1972) analyzes *so* in this context (e.g. his [(10)]) as a pro-CP (pg. 73-74).

- (10) Max believes that he is popular, and I believe so, too.

The following data show that there are restrictions on the distribution of *so* that do not apply to CPs. I.e., *so* does not behave like a CP, casting doubt on the claim that *so* is a pro-CP. For example, *so*, taken to be a pro-CP, only replaces a CP in post-verbal position. The subject and topic CPs in (11a,b) respectively cannot be replaced by *so* (cf. (12a,b)), and, even as the complement of V, a CP cannot be replaced by *so* if it is embedded in a coordinate structure (cf. (11c)-(12c)).

- (11) a. That Ingrid was arrested worries me.
b. That Ingrid was arrested, I just can't believe.
c. Alistair believes that Ingrid was arrested and that Theo bailed her out.
- (12) a. *So worries me.
b. *So, I just can't believe.
c. *Alistair believes that Ingrid was arrested and so.

Even being directly post-verbal is in itself insufficient to license putative *so*-replacement of CP. Only bona fide complement CPs may be replaced by *so*. Subject-to-subject raising is only possible out of a complement clause, meaning that the post-verbal CPs in (13c,d) are bona fide complements (cf. (14c,d)), while the post-verbal CPs in (13a,b) are not (cf. (14a,b)), they are post-posed subjects. The examples in (15) show that only the complement CPs in (13c,d) may be replaced by *so*, the subject CPs in (13a,b) may not.

- (13) a. It worries me that Ingrid was arrested.
b. It surprises me that Ingrid was arrested.
c. It turns out that Ingrid was arrested.
d. It seems that Ingrid was arrested.
- (14) a. *Ingrid worries me to have been arrested.
b. *Ingrid surprises me to have been arrested.
c. Ingrid turns out to have been arrested.
d. Ingrid seems to have been arrested.
- (15) a. *It worries me so.
b. *It surprises me so.
c. It turns out so.
d. It seems so.

Even in complement position, *so* is not possible with some predicate types, namely lexical participles, lexical adjectives, nouns, and certain verbs, including *deny*, *doubt* and *rule out*.

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- (16) a. Alistair is irritated that Ingrid was arrested. [lexical participles]
b. Alistair is angry that Ingrid was arrested. [lexical adjectives]
c. Alistair is sure that Ingrid was arrested.
d. Ingrid denies the rumor that she was arrested. [nouns]
e. Ingrid denies that she was arrested. [certain verbs]
f. Ingrid doubts that she was arrested.
g. Ingrid has ruled out that she might have been arrested.
- (17) a. *Alistair is irritated so.
b. *Alistair is angry so.
c. *Alistair is sure so.
d. *Ingrid denies the rumor so.
e. ?Ingrid denies so.
f. ?Ingrid doubts so.
g. *Ingrid has ruled out so.

Irrespective of the cause of the breakdown in the examples in (17), which I have no insight on, the data in (16) and (17) militate against the pro-CP account for *so* and are suggestive of a commonality with big-VP *so* discussed in section 2. They militate against a pro-CP account because they again show a disparity between the behavior of CP complements, which are systematically grammatical (16), and their putative *so* counterparts (17), which are ungrammatical to a greater (17a-d,g) or lesser (17e,f) extent. The sensitivity to the lexical category of the predicate and its semantic composition (perhaps including negation in (17e,f)) indicates that *so* replacement has access to more information about its syntactic environment than just the category of the constituent it (putatively) replaces (CP). It is aware of lexical characteristics of its (putative) selector. This dependency lends some preliminary credibility to a treatment of *so* in *believe so* on analogy to *so* in *do so*. If *so* in *believe so* is a big-VP, its interaction with lexical syntax is unremarkable. It itself is a component of that lexical syntax. The question of the source of the ungrammaticality in (17) remains open, but is a tractable question from the perspective of *so*-as-big-VP, whereas from the *so*-as-pro-CP perspective, the sensitivity of pronominalization of CP to lexical characteristics of the verb (that, moreover, the CP is not itself sensitive to) is puzzling.

A further point of similarity between *so* of *believe so* and *do so* is that *so* in *believe so* is not subject to transformations that affect CPs. E.g., *so* does not undergo passivization (19a), raising (19b) or tough-movement (19c), unlike CPs in general (18) but like *so* in *do so* (20) (Bouton 1970).

- (18) a. That Ingrid was arrested is assumed by everyone.
b. That Ingrid was arrested seems to be assumed by everyone.
c. That Ingrid was arrested is hard to believe.
- (19) a. *So is assumed by everyone.
b. *So seems to be assumed by everyone.

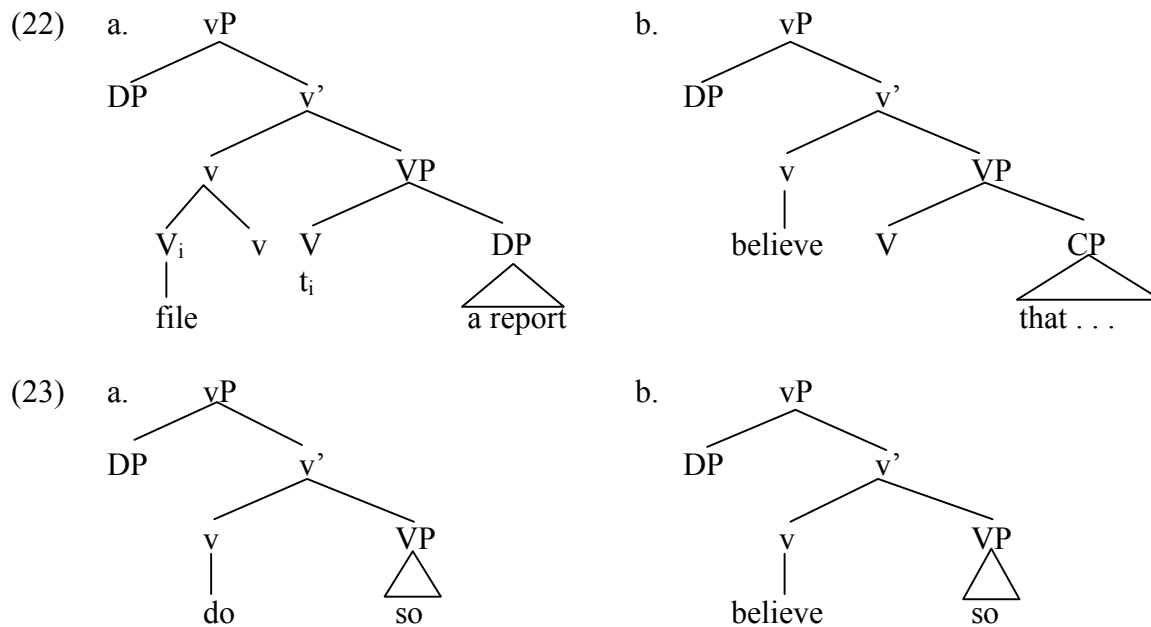
c. *So is hard to believe.

- (20) a. *So is done all the time.
 b. *So seems to be done all the time.
 c. *So is hard to do.

So of *do so* is also not subject to topicalization, again like in *believe so* (compare (21) with (12b)).

(21) *So, Alistair just can't do.

The data discussed above indicate that *so* in *believe so* is not a pro-CP. The inadequacy of the pro-CP analysis and the parallels to *do so* suggest that *so* in *believe so* is a pro-big-VP. However, big-VP replacement by *so* in *believe so* strands the verb, unlike in *do so*. If the conclusion that *so* is a big-VP in both types of constructions is correct, *believe* must be generated higher than big-VP. The fact that *do* is blocked in the *believe so* construction suggests that *believe* occurs in little-*v*, obviating pleonastic *do*. I.e., while e.g. *file* and similar verbs move into little-*v* (22a), a process blocked by *so* replacement of big-VP (23a), *believe* and similar verbs are base generated in little-*v* (22b), and therefore persevere under *so* replacement of big-VP (23b). Big-VP in both cases is an unaccusative subcomponent of the predicate, licensing only a theme.



3.1 A Theta-Theoretic Generalization about the Verb Classes

The difference posited here in the distribution of eventive verbs, like *file*, and stative propositional-complement verbs, like *believe*, correlates with a difference in the extent to which properties of the external argument are essential to the valuation of the clause.

Little-*v* licenses experiencers (Chomsky 2000:footnote 8, pg 43, and others). *Believe*-type verbs describe experiences, or states of mind. Their occurrence in little-*v* accords with locality constraints on theta role assignment—the argument whose state of mind is described by *believe* is local to *believe*. In contrast, eventive verbs, which occur in big-*V*, do not make assertions about the condition of their agent, but rather of their patient, as Kenny (1963) observes:

To find out whether you have washed the dishes, it is of little use to inspect you; whereas an examination of the dishes is always a help to settling the question, and may indeed settle it definitely, if they are still dirty. To be sure, there will very often be a change in the agent as a result of an action: when I have chopped down the oak-tree, I am usually hotter and stickier than when I started. But this is not essential to the truth of “I have cut down the oak” as it is essential to its truth that the oak should not be in the same condition as it was. —pg. 180

4. On the Syntax of *Tell Someone So*

In a third class of verbs (the first two being *believe*-type and garden variety *file*-type verbs), the behaviors of *do so* and *believe so* co-occur. These verbs include *tell, say, remind, relate, promise, admit, swear, prove, convince, persuade, insist, indicate, suggest, repeat, affirm, confirm, insinuate, report, concede, announce, demonstrate, propose, claim, reveal*, and others. In this verb class, *so* substitution may, but need not, subsume the verb, indicating that *so* may replace a constituent smaller than *vP*, but also smaller than *VP*.

- (24)
- a. Alistair told me that Ingrid had been arrested, and Theo told me so, too.
 - b. Alistair reminded me that Ingrid had been arrested, and Theo reminded me so, too.
 - c. Alistair convinced me that Ingrid had been arrested, and Theo convinced me so, too.
 - d. Alistair promised me that Ingrid will be arrested, and Theo promised me so, too.
 - e. Alistair said (to me) that Ingrid had been arrested, and Theo said so (to me), too.
 - f. Alistair admitted (to me) that Ingrid had been arrested, and Theo admitted so (to me), too.
 - g. Alistair proved (to me) that Ingrid had been arrested, and Theo proved so (to me), too.
 - h. Alistair suggested (to me) that Ingrid had been arrested, and Theo suggested so (to me), too.

- (25)
- a. Alistair told me that Ingrid had been arrested, and Theo did so, too.
 - b. Alistair reminded me that Ingrid had been arrested, and Theo did so, too.
 - c. Alistair convinced me that Ingrid had been arrested, and Theo did so, too.
 - d. Alistair promised me that Ingrid will be arrested, and Theo did so, too.
 - e. Alistair said (to me) that Ingrid had been arrested, and Theo did so, too.
 - f. Alistair admitted (to me) that Ingrid had been arrested, and Theo did so, too.
 - g. Alistair proved (to me) that Ingrid had been arrested, and Theo did so, too.
 - h. Alistair suggested (to me) that Ingrid had been arrested, and Theo did so, too.

That two possible replacement sites for *so* are available in these verbs correlates with their ditransitivity. All the verbs in this class license an indirect object which denotes the receiver of the information presented in the CP. The indirect object is either obligatory, as in *tell someone*, or optional, in which case it occurs in a *to*-phrase, as in *say to someone*.

Both direct and indirect objects are subsumed under *do so* replacement (Lakoff and Ross 1966; see also Déchaine 1994). All the examples in (26) are ungrammatical. *Do so* replacement strands a direct object in (26a), an obligatory indirect object in (26b) and an optional indirect object in (26c). The ungrammaticality of these cases indicates, in light of the conclusions from sections 2 and 3, that both direct and indirect objects are subordinate to little-*v*.

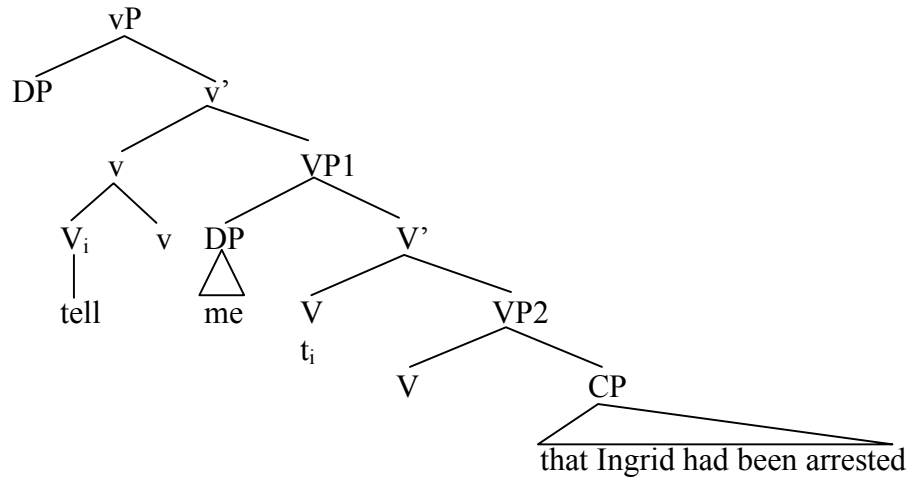
- (26)
- a. *... and Theo did so that she hadn't. [as a continuation for e.g. (25a)]
 - b. *... and Theo did so Moritz. [as a continuation for e.g. (25a)]
 - c. *... and Theo did so to Moritz. [as a continuation for e.g. (25e)]

But only the direct object is subsumed under verb-stranding *so*-replacement (the type exemplified in (24)). In this verb class, there appears to be more than one possible insertion point for *so*, one that includes only the indirect object, and excludes the direct object and verb (seen in (24)), and another that includes the indirect object, direct object and verb, excluding only little-*v*, which is filled by *do* (seen in (25)). This pattern implies the constituency in (27), where both of the bracketed constituents are subject to *so* replacement.

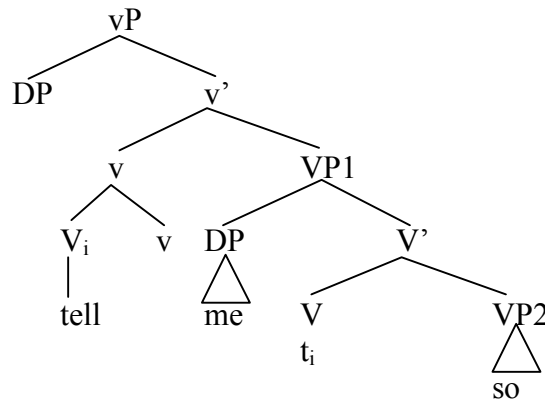
- (27) Theo *v* [tell me [that Ingrid was arrested]]

Since *so* replaces big-VP, both constituents are big-VPs, indicating that the *tell*-type verbs present two big-VP shells internal to *vP*, each of which is associated with an argument: the lower shell houses the direct object and the higher shell the indirect object and the verb. In this analysis, the fact that these verbs offer two insertion points for *so* correlates with the fact that they are ditransitive. These conclusions are illustrated in (28).

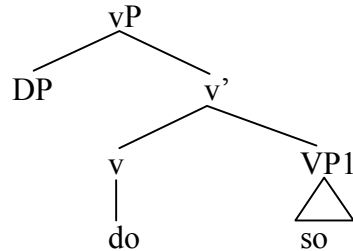
(28) a.



b.



c.



5. On the Syntax of *Discover So*

In light of the conclusions above regarding the *tell*-type verbs, it is of some consequence that there is also a class of verbs that behave like *tell* in allowing both *do so* and verb-stranding *so*, but that do not seem to take an indirect object. This class includes *discover*, *conclude*, *remember*, *infer*, *figure out*, *establish*, *ascertain*, *learn*, and others.

- (29) a. Alistair discovered that Ingrid had been arrested, and Theo discovered so, too.
 b. Alistair concluded that Ingrid had been arrested, and Theo concluded so, too.
 c. Alistair remembered that Ingrid had been arrested, and Theo remembered so, too.
 d. Alistair learned that Ingrid had been arrested, and Theo learned so, too.

- (30) a. Alistair discovered that Ingrid had been arrested, and Theo did so, too.
b. Alistair concluded that Ingrid had been arrested, and Theo did so, too.
c. Alistair remembered that Ingrid had been arrested, and Theo did so, too.
d. Alistair learned that Ingrid had been arrested, and Theo did so, too.

No verb in this class displays an indirect object, neither optionally or obligatorily.

- (31) a. *Alistair discovered us that Ingrid had been arrested.
b. *Alistair discovered to us that Ingrid had been arrested.

In these verbs, the fact that two insertion points seem to be available for *so* does not correlate with ditransitivity. It appears either that one of the shells does not license an argument or the VP-shell approach is incorrect for the *discover*-type verbs, and therefore potentially also for the *tell*-type verbs.

However, the *discover*-type verbs share a suggestive semantic commonality with the *tell*-type verbs. In the process of discovering, remembering, concluding, and so on, one acquires information. The acquisition of information is also part of the meaning of the *tell*-type verbs, all of which describe the transference of information (in various manners) to the receiver argument, named by the indirect object. The difference between the *discover*-type verbs and the *tell*-type verbs is that in the *discover*-type verbs, the agent and the receiver are one and the same individual—the subject names both. The Theta Criterion, which disallows two theta roles from being assigned to one DP, restricts the possible analyses of the *discover*-type verbs. Theta Criterion dictates that such expressions contain a covert third argument bearing the receiver role, which is controlled by the subject, as diagrammed in (32). (32) is isomorphic to (28), explaining the similarity in behavior between the *discover* class and the *tell* class.

- (32) [_{VP} Alistair_j [_v discover_i [_{VP1} PRO_j t_i [_{VP2} that Ingrid had been arrested]]]]

6. Some Additional Remarks

This section presents a few additional remarks on the verb classes discussed above and on some verb classes not discussed above.

6.1 Additional Structure within Big-VP

Do so resolves a scope ambiguity that *again* displays in the unpronominalized counterpart VP (Kyle Johnson, p.c.).

- (33) a. Alistair opened the window this morning, and this afternoon he opened it again.
b. Ingrid opened the window this morning, and this afternoon Alistair opened it again.

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- (34) a. Alistair opened the window this morning, and this afternoon he did so again.
b. #Ingrid opened the window this morning, and this afternoon Alistair did so again.

Again induces a presupposition that is subject to a scope ambiguity in the phrase *Alistair opened it again*. *Again* may presuppose that the door was open previously, with no commitment to any previous opening event. Or *again* may presuppose a previous opening of the door by Alistair. If (transitive) *open* means *cause to open*, the ambiguity is perspicuously captured as a scope ambiguity between *again* and *cause*. If *again* presupposes what lies in its scope, the structure in (35a) yields the presupposition that *x* caused *y* to open previously, whereas (35b) yields only the presupposition that *y* opened previously.

- (35) a. $[[_{VP} x \textit{ cause } [_{VP} y \textit{ open }]] \textit{ again }]$
b. $[_{VP} x \textit{ cause } [[_{VP} y \textit{ open }] \textit{ again }]]$

The disappearance of the ambiguity in (34b) is unexpected, since the underlying unaccusative component that *again* modifies in (34b) is syntactically instantiated there, as *so*.

- (36) $[_{VP} x \textit{ do } [[_{VP} \textit{ so }] \textit{ again }]]$

That the ‘low’ reading of *again* is not available when big-VP is replaced by *so* indicates that *so*-replacement subsumes the low position for *again*, meaning that this position is found inside big-VP; it is not big-VP itself. This conclusion implies yet additional structure within VP, even for garden variety transitive verbs like *open* (and *file*, etc.). Such structure has been proposed by Embick (2004), and others, who postulate an uncategorized stative root underlying VP, implying the structure in (37) for e.g. *open*, where *fient*[*ive*] is an inchoativizing head (according to Embick).

- (37) $[_{VP} x \textit{ cause } [_{VP} \textit{ fient } [_{ROOT} \textit{ open }]]]]$

This structure presents an adjunction site for *again* internal to the constituent replaced by *so*. The category ROOT is not itself subject to *so*-replacement because it is not of category big-VP.

Note that other adverbs, such as *almost*, display a scope ambiguity like *again* and retain it with *do so* (Jonathan MacDonald, p.c.). Example (38a) asserts either that Ingrid almost went about killing Alistair, but never actually began, or that she began killing Alistair but never actually finished, i.e., she caused him to be almost dead.

- (38) a. Ingrid almost killed Alistair.
b. Ingrid didn’t kill Alistair, but she almost did so.

Example (38b) is more felicitous than (34b) (though not as good as ...*but she almost did*). The behavior of *almost* indicates that *so* is a possible adjunction site for

certain adverbs, just not for *again*, and the pattern in (33) and (34) has more to do with the distribution of *again* than with the lexical composition of *open* and other *file*-type verbs.

6.2 Structural Ambiguities in Some Verbs

Certain verbs are ambiguous between a *file*-type reading and a *tell/discover-* (39) or *believe*-type (40) reading.

- (39) a. *Ingrid read the article, and Alistair read so, too.
b. Ingrid read that Theo was arrested, and Alistair read so, too.
- (40) a. *Ingrid sensed many changes on the horizon, and Alistair sensed so, too.
b. Ingrid sensed that many changes were on the horizon, and Alistair sensed so, too.

According to the proposal made here, verbs like *read* and *sense* are structurally ambiguous. Their use in the *b*-examples above involves a VP2 that is not present in their use in the *a*-examples. In (39a), *read* has the structure in (22a), and in (39b), it has the structure in (22b).

6.2 Complex Predicates That Do Not Allow *So*-Replacement

6.2.1 Double Object Verbs

Certain verbs plausibly analyzed as complex predicates nonetheless do not offer more than one possible insertion site for *so*, e.g. *give*-type verbs.

- (41) a. Ingrid gave Alistair a banana, and Theo did so, too.
b. *Ingrid gave Alistair a banana, and Theo gave so, too.

Example (41a) shows that these verbs contain a VP1, like other eventive verbs. (41b) shows that whatever additional internal structure they have, either (i) this structure is not of category VP, but rather, perhaps, PP (Larson 1988), or (ii) there are additional restrictions on *so*-replacement other than categoryhood, e.g. conditions on semantic compatibility. The latter possibility requires a semantic analysis for double object constructions beyond the scope of the present paper.

6.2.2 Experiencer Verbs

The conclusion that stative propositional complement verbs are generated in little-*v* does not seem to extend to stative verbs in general.

- (42) a. *Ingrid loves anchovies, and Alistair loves so, too.
b. *Ingrid fears ghosts, and Alistair fears so, too.

The remarks above regarding double object verbs apply here too, though in this case there is independent support for the category-mismatch proposal. Subject experiencer verbs like *love* and *fear* are argued to be denominal in Noonan (1992) and Georgopoulos (1987). Noonan claims that subject experiencer verbs are formed from a nominal base in conjunction with a possessive light verb. E.g. *fear* has the lexical structure [*have* [*fear_N*]]_V. Georgopoulos shows that experiencer verbs in Palauan are morphosyntactically nominal predicates; agreement morphology follows the paradigm for possessors for these verbs, which reifies Noonan's possessive analysis. If the lexical base of experiencer verbs is nominal, i.e. NP, it is not expected to be subject to *so*-replacement, since *so* replaces big-VP.

7. Conclusion

The facts reviewed here indicate that *so* is a pro-big-VP in *do so*, *believe so*, *tell someone so* and *discover so*. Contrary to appearances, the *discover*-type verbs belong to the same class as the *tell*-type verbs. *Do* in *do so* is a pleonastic little-v. That the *believe*-type verbs are not subsumed under *so*-replacement indicates that they, too, are little v's, though not pleonastic. Thus, there is a difference in syntactic category between the *believe*-type verbs on one hand and the *tell/discover*- and *file*-type verbs on the other. The *believe*-type verbs are lexical little-v's, while the *tell/discover*- and *file*-type verbs are lexical big-V's.

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