

Some Notes on Much-Support*

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1. Introduction

Much attention has been paid to the properties of so-called do-support, an illustration of which is given in (1), because do-support is characteristic of Modern English and there appears to be no parallel mechanism in any other language.

- (1) a. John didn't kiss Nancy.
b. Did John kiss Nancy?

Some researchers claim, however, that this is not the case. Korean or French counterparts are often discussed, for example.¹ Bouchard (1995: 406), giving an example of comparative constructions in French, mentions that "in a theory that assumes empty slots, to have a dummy element fill an empty slot is not language specific and it is a general UG strategy," and that "what is language specific is just the choice of element that is used as a dummy in any given language for any given category."

Even if we restrict the scope of our discussion to Modern English, things are not so simple. Corver (1997) claims that much as well as do can function as a dummy element and provides the evidence for the dummy usage of much, introducing the terminology much-support. According to Corver, much-support is an adjectival equivalent to do-support. Roughly speaking, the occurrence of do-support is accounted for based on the economy principle that do is inserted as a last resort. Corver claims that much also can be inserted as a last resort, and explains the following data by the much-support hypothesis:

- (2) a. This story is exciting, maybe even too *(much) so.
b. This story is too (*much) exciting.

Namely, much must be inserted in (2a), but not in (2b), for the reasons of economy.

I agree with Bouchard and Corver that do-support is not a language-specific or construction-specific operation. I want to claim mainly in this paper, however, that an adjectival counterpart to do-support called much-support does not exist, by pointing out some flaws in Corver's analysis.

To discuss Corver's analysis in detail, I will summarize it in the following section. I will examine the appropriateness of the analysis in Section 3 and make some speculations about constructions containing much in Section 4.

2. Much-Support and So-Pronominalization

Corver agrees with Bresnan (1973) that degree words modifying adjectives are classified into two groups, occupying different syntactic positions. One group consists of as, how, that, too, so, which are called determiner-like degree words; and the other group includes more, less, enough, which are called quantifier-like degree words. Corver assumes that the structure of adjective modification is as follows:

$$(3) [D_{\text{DegP}} \text{ Deg } [Q_P \text{ Q } [A_P \text{ A }]]]$$

Determiner-like degree words appear in the Deg position and quantifier-like degree words in the Q position. In Corver's analysis, the phrase too exciting is assigned the following structure:

$$(4) [D_{\text{DegP}} \text{ too } [Q_P \text{ e } [A_P \text{ exciting }]]]$$

Since the adjective exciting can be raised to the empty Q position, the structure in (5) is arrived at:

$$(5) [D_{\text{DegP}} \text{ too } [Q_P \text{ exciting}_i [A_P \text{ t}_i]]]$$

The empty Q position is assumed to have to be occupied for some reason and thus cannot be empty for convergence. To obtain convergent derivations, there are two methods: insertion of some element or raising of the adjective. By analogy with do-support, Corver concludes that raising of the adjective is more economical. Since only the most economical convergent derivation is permitted, the raising operation is selected in cases like (4).

Thus (5) is taken as a legitimate representation.

Interestingly, Corver also points out the case where the insertion operation is required. According to Corver, if AP is replaced with the pro-form so, much must be inserted into the empty Q position as a dummy element, as in (6):

$$(6) \text{ This story is exciting, maybe even too *(much) so.}$$

If the pro-form so appears, the raising operation becomes unavailable, because so is a maximal projection and cannot be raised to the head Q. The dummy element much is thus inserted as a last resort. Corver calls this insertion operation much-support. The following examples cited from Corver

(1997) also demonstrate this:²

- (7) a. John is fond of Mary. Maybe he is too *(much) so.
 b. John is fond of Mary. Maybe he is as *(much) so as Bill.
 c. The weather is hot in Cairo—so *(much) so that we stayed indoors all day.
 d. John told me he was afraid of spiders, but I wonder how *(much) so he really is.

In the examples above, the pro-form so is used, which means that A-to-Q raising cannot occur and requires much-insertion. As indicated in (6) and (7), much must occur in the context of utilizing the pro-form so. To summarize, Corver's claim is that the following contrast is attributed to the principle of economy:

- (8) a. too *(much) exciting
 b. too *(much) so

In (8a), but not in (8b), raising of the adjective to the Q position, which is more economical, is permitted. The Q position is assumed to correspond to the functional category AGRS or T serving as a place occupied by do.

Note that Corver considers that semantic aspects of the movement operation and much-support have something to do with modification by degree words. He extends Higginbotham's (1985) principle of thematic discharge to modification by degree words. Higginbotham claims that verbal predicates like sleep have an Event argument to be θ -bound by a Tense operator. In the following example, taken from Corver (1997), the Past tense operator θ -binds the Event argument E:

- (9) [_{IP} John [_{I'} [_I +Pst] [_{VP} slept _{<I, E, I>}]]]

Corver assumes that adjectives can have a G(rade) argument to be θ -bound by degree words. For example, too θ -binds G of exciting in the following example:

- (10) [_{DP, KP} too [_{QP} exciting _{<I, G, I>} [_{AP} tk]]

Corver assumes that the local relation is needed for this θ -binding. The adjective is raised to the Q position to satisfy the locality condition. In the case where so occurs as a pro-form of AP, Q, a head position, cannot be occupied by raising so and degree words cannot establish a local relationship with G in so. In this case, much is inserted into the Q position and copies G in so, yielding the licit binding structure. In this structure, the relation be-

tween the degree word and G is local.

Note also that Corver considers this usage of much to be parallel to that of do in the following example:

(11) John studied Japanese, and Nancy did so, too.

(11), like (6) and (7), involves pro-form so. Much and did precede so in (6) and (7) on the one hand and (11) on the other hand, respectively. Corver therefore takes much and did to have the same function. Both are dummy elements inserted to satisfy the economy condition. According to Corver's analysis, do-support is required in the context of so-pronominalization, as in (11), as well as in negative or interrogative sentences. Corver thus presents the account in which did in (11) is taken as an auxiliary. I will turn to this topic in Section 3.2.

3. Some Problems with the Much-Support Analysis

It is interesting to explore the idea that a mechanism similar to do-support potentially exists in human language and that do-support is not a unique operation. I am wondering, however, whether much-support is an adjectival counterpart to do-support. In the rest of this paper, I will point out what is problematic about Corver's claims described above and attempt to give other explanations for the presence and absence of much.

3.1. Constituency Test

One of the claims Corver makes is that the structure of the adjective modification is as in (3), repeated here for convenience:

(3) [_{DP} Deg [_{QP} Q [_{AP} A]]]

(3) implies that too much so, for example, is a constituent, which is the case.

Consider the following example given in Corver (1997):

(12) John told me he was afraid of spiders, but I wonder
[how much so] he really is.

(12) shows that movement is applicable to the string Deg-much-so. Thus we are led to the conclusion that it is a constituent. It should be noted, however, that some native speakers accept movement of the string Deg-much. Compare the following example with (12):

(13) John told me he was afraid of spiders, but I wonder how
much he really is so.

As shown in (13), only the string Deg-much can move, leaving the adjective behind. (3) predicts that this derivation is illicit. The string Deg-much does not make a constituent in (3). But (13) suggests that it does form a constituent structure. This clearly poses a question to Corver's analysis.

3.2. Main Verb Do and Auxiliary Do

Corver takes do in do so constructions as an auxiliary, relating it to much in constructions like too much so. It is often argued, however, that do in do so constructions is a main verb, not an auxiliary, and that there are two types of pro-verb do. Do in do it, do that and do the same is also considered to be a main verb. In the following examples do is an auxiliary:

- (14) a. John left and Nancy did, too.
 b. John studied hard and Nancy did, too.
 c. John didn't talk and Nancy didn't, neither.

In (14), do is used without so. This type of pro-verb do shows the same distributional pattern as modal auxiliaries. Do without so, it, that or the same is thus often distinguished and classified as an auxiliary.³ The difference between the two types of pro-verb lies in the restriction on the verbs they refer to. The main verb do only takes an agentive verb denoting action as an antecedent. But such restriction is not imposed on the auxiliary do:

- (15) a. John studied hard and Nancy did so, too.
 b. John left and Nancy did so, too.
 c. John didn't talk and Nancy didn't do so, either.
 (16) a.*John loves her mother and Nancy does so, too.
 b.*John knows the answer and Nancy does so, too.
 c.*John has a big house and Nancy does so, too.
 (17) a. Some people might like an autograph.—Perhaps Billy does.
 b. Some people may not know who she is.—I certainly don't.
 c. I feel terrible.—I know you do.

As shown in (15) and (16), the verb phrase do so can refer only to action verbs, not to stative verbs. However, this kind of restriction is irrelevant to do used without so. This holds of the usage of modal auxiliaries. The stative verbal phrase see John is missing after will in (18):

- (18) Mary may see John when Anne will.

Furthermore, typical auxiliary verbs cannot be followed by so, as illustrated in (19):

- (19) a. *She can run fast, and he can so, too.
 b. *He has arrived, and she has so, too.

Do in do so thus behaves quite differently from can and has in (19), which also suggests that do in do so is not an auxiliary. Do in do so is a main verb and it is quite strange that main verbs are inserted as a last resort.

Recall that do in interrogative sentences appears through do-support:

- (1) b. Did John kiss Nancy?

The restriction discussed above is not imposed on Subject-Aux Inversion.

The following interrogative sentences have stative verbs as main verbs:

- (20) a. Does John love Nancy?
 b. Do you know the answer?

Interrogative sentences are typical contexts where dummy do occurs and the restriction on the semantic type of verbs is not relevant to do-support in generating interrogative sentences. This also casts doubts on the idea that do in do so occurs through do-support.

To sum up, the behavior of do in do so constructions is clearly different from that of typical auxiliaries. In contrast, do without so behaves like other auxiliaries. We can thus conclude that do used with so is not an auxiliary, but a main verb, and that the occurrence of do in do so constructions is not relevant to do-support. We cannot directly compare do in do so with much in too much so, claiming that do and much in these cases are both dummy elements.

3.3. On the Status of So in Much-Support Contexts

Corver assumes that so replaces AP in the structure of (3), repeated here:

- (3) [_{DP} Deg [_{QP} Q [_{AP} A]]]

As Corver himself notes, however, QP can be replaced by so:

- (21) a. John is [_{QP} more intelligent than Bill] and Mary is so, too.
 b. John seems [_{QP} less conscious of the consequences than Sue] and Bill seems so, too.

Suppose that the structure of (22a) is (22b), in which QP is replaced by so,

as in (21):

(22) a. *too so

b. [_{DP} too [_{QP} so]]

Remember that Corver accounts for the ungrammaticality of (22a) in terms of the economy principle, considering that so replaces AP. According to Corver, much is required to occupy the empty Q position. But (21) suggests that (22a) can have the structure in (22b). If so, the operator too is adjacent to so, which has an argument G to be θ -bound. Corver must thus give an explanation of the illicitness of (22b) and would be forced to make a stipulation with respect to the contrast between (21) and (22).

4. Without Much-Support

The three problems with the much-support analysis have arisen in the preceding section. First, it follows from the constituency test that much is not inserted as a dummy element in the Q position in the structure in (3). Second, it cannot be said that much is a dummy element by analogy with do in do so. Third, the much-support analysis faces a difficulty in explaining the illicitness of (22b). If we do not adopt the much-support analysis, the first and second problems immediately disappear.

The third problem can be solved without depending on the much-support analysis. My claim is that (22a) can be explained together with the following example discussed by Corver.

(23) * John is too more interesting.

Suppose that (23) has the structure of (24):

(24) John is [_{DP} too [_{QP} more [_{AP} interesting]]]

(22b) and (24) suggest that determiner-like degree words like too cannot directly modify QP. The examples in (25) as well as familiar much-support examples discussed so far are consistent with this idea:

(25) a. too *(much) more exciting

b. too *(much) too tall

c. as *(much) too tall

(26) too *(much) so

More exciting and too tall are categorially QP. Therefore if so in (26) is also QP, both (25) and (26) can be explained in the same way. In other words, much is necessary in (26) not because the empty Q position must be

occupied, but because too cannot modify QP.

It can be explained why too cannot be a modifier of QP along the line taken by Corver. Q as well as Deg is an operator which is a potential θ -binder of G of adjectives. In (23), for example, G of interesting is θ -bound by more and thematic discharge is completed within QP, resulting in the violation of the ban on vacuous quantification. There is nothing to be θ -bound by the operator too in (23), which leads to the ungrammaticality. This explanation is applicable to (22b). So is QP, which means that thematic discharge is completed in so and the information about the operator is contained in it. Therefore too fails to establish the θ -binding relation with so in (22b). To avoid the vacuous quantification, much must appear as indicated in (25) and (26). Much is θ -bound by the determiner-like degree words.⁴

The observation that the determiner-like degree word and much form a constituent, which is made in Section 3.1, is consistent with the close relationship between too and much. I assume here that the constituent consisting of too and much is DegP, whose head is too, and that the string too much modifies QP, taking the following adjunction structure:

(27) [_{QP} [_{DegP} [_{Deg} too] [_{AdvP} much]]] [_{QP} more interesting/so]]

I further assume that the adjunction structure is what typically allows adverbial modification. Modification in (27) is licensed through the adjunction structure, but not thematic discharge.

The question immediately arises here as to why (5), repeated here, is acceptable:

(5) [_{DegP} too [_{QP} exciting_i [_{AP} t_i]]]]

In (5), too takes QP as its complement. But this time thematic discharge is not completed within QP because there is no Q operator and head-to-head movement occurs.⁵ Exciting is raised to the Q position and becomes adjacent to too. This means that too θ -binds G in exciting, satisfying the principle of thematic discharge. Therefore (5) is not excluded. It should be noted here that the following structure is not allowed:

(28)*[_{QP} [_{DegP} too much] [_{QP} exciting_i [_{AP} t_i]]]]

Exciting in (28) has an open position G, that is, a free variable, violating the principle of Full Interpretation.

There is reason to believe that, in many cases, the pro-form so is not

merely AP denoting a property. Declerck (1991: 272) notes that “so is not used as the pro-form for an adjective in clauses with be that merely express (dis)agreement or (dis)similarity” :

- (29) a. Do you think she is reliable? She certainly is (not).
 b. John is not a born leader, but Bill is.
 c. John is not stupid, and Bill isn't either.

In (29), it is impossible to use so with be. To put what Declerck says differently, so cannot follow be if the meaning expressed by elliptical constructions is only related to the truth value. Expressing agreement or disagreement is equal to giving affirmative or negative statements. What is semantically important in the elliptical parts in (29) is whether their semantic contents are true or false. Declerck's intuition is thus that elliptical constructions involving only be and those involving be so are different in meaning and that the selection of the former is concerned with the determination of the truth value.

Shimada (1997), extending the ideas of Watanabe (1994) and Solà (1996), suggests that elliptical constructions utilizing the auxiliary do as in (14) are also involved in the truth value and that this is the property shared with do in (1), where negation or interrogation, which also has a direct relationship to the truth value, is expressed:

- (14) a. John left and Nancy did, too.
 b. John studied hard and Nancy did, too.
 c. John didn't talk and Nancy didn't, neither.
 (1) a. John didn't kiss Nancy.
 b. Did John kiss Nancy?

I assume that this also holds of elliptical constructions involving only be. As for the case where so appears following be, it seems that the meaning of the elliptical constructions is not merely related to the truth value. Rather, expressing the degree seems relevant. In fact, most of the elliptical constructions with so contain the degree words:⁶

- (30) a. She's pretty clever but her sister is less so.
 b. He is very happy to have found a job—the more so because none of his friends have managed to find one.
 (31) a. John is [_{QP} more intelligent than Bill] and Mary is so, too.
 b. John seems [_{QP} less conscious of the consequences than

Sue] and Bill seems so, too.

- c. The work is [_{QP} rather tedious]. At least I find it so.⁷

So in (30) is θ -bound by quantifier-like degree words and so in (31) takes QP as its antecedent. This strongly suggests that the elliptical parts as in (30) and (31) have the meanings of the degree, not merely the property. When so appears without quantifier-like degree words, it is generally categorially QP.

Both examples in (30) show so can be categorially AP and some readers may wonder whether the same explanation is applicable to (22a) and (23), repeated here:

(22) a. *too so

(23) * John is too more interesting.

My suggestion has been that too cannot modify QP. There is a possibility that so in (22a) is categorially AP. In this case, (22a) would have the following structure containing QP:

(32) [_{DegP} too [_{QP} e [_{AP} so]]]

In (32), too and so cannot establish a local relationship, which leads to the ungrammaticality. Since so is AP, it cannot be raised to the Q position.

Summarizing, the pro-form so is potentially QP, or it must be θ -bound by quantifier-like degree words if it is categorially AP. That is why elliptical constructions with be followed by so mean more than affirmative or negative statements. This property of so implies that we cannot analyze too much so in such a way that so is necessarily AP and much is inserted in the Q position in (3). That is, we should account for the presence and absence of much without depending on much-support.

5. Concluding Remarks

I have so far discussed the much-support analysis proposed by Corver and raised some questions. I pointed out the constituency of the string consisting of the determiner-like degree word and much, the main verb status of do in do so constructions, and the QP status of so. I agree with Bouchard and Corver that a mechanism like do-support is not special to the auxiliary do in Modern English. It is doubtful, however, whether much-support exists in English and whether it is an adjectival equivalent to do-support. The seman-

tic properties of the contexts of do-support are often discussed in works like Laka (1990), Solà (1996), Watanabe (1995), Shimada (1997), among others. The nature of do-support should be studied in much more detail to attempt to find similar phenomena and to present a theoretically interesting analysis.

NOTES

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¹ See Bouchard (1995), for example.

² This kind of restriction is not imposed on quantifier-like degree words like more, less and enough:

(i) a. This story is exciting, more so than yours I think.

b. This story is exciting, but less so than mine.

c. John is good at mathematics. He seems enough so to enter our graduate program. (Corver (1997))

³ See, for example, Hankamer and Sag (1976), and Miller (1997).

⁴ It can be said that the ungrammaticality of (22a) is attributed to the determiner-like property of too and the pro-form status of so. Consider the following examples:

(i) a. the man

b.*the it

While the determiner the can attach to the noun man, it cannot take the pronoun it as its complement. The pronoun it refers to DP. It holds the information about the definiteness and thus need not be headed by the determiner. There is a significant parallel between (22a) and (ib). So is QP and the information about the operator is contained in so. The existence of the operator too is thus redundant in (22a), which is the reason for the unacceptability.

⁵ Note that A-to-Q raising and the usage of much are independent of each other. The aim of this paper is to argue against the dummy usage of much. Even if Corver's argument for A-to-Q raising is valid, this is not evidence suggesting that much can function as a dummy element.

⁶ See also note 2.

⁷ Though so in (31c) is not preceded by be, I assume that this type of ellipsis falls into the same class.

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