

Against 'dummy' DO: A 'low' DO_{AUX} alternative

J. L. G. Escibano

Introduction

There are several [PHON: DO] homonyms. So-called 'dummy' DO has the 'NICE' properties¹ and is incompatible with all auxiliaries; 'spurious' DO lacks them, cf. Schütze (2004); 'imperative' DO has them but can be followed by aspectual and voice auxiliaries² and has long been considered different, perhaps a variant of *will*, as the tag suggests in e.g. *Don't shout, will you?*³; (British English) 'pro-VP' DO, transitive DO selecting VP pro-forms (*so/it/that*)⁴ and other DO homonyms are main verbs (MV, hereafter), lack the NICE properties and can be preceded by auxiliaries and 'dummy' DO (cf. *He did not do a particularly good job, He did do a particularly good job*).

On inflectional and syntactic grounds, traditional grammarians considered 'dummy' DO an auxiliary verb, but Chomsky⁵ analysed it as a 'dummy', and his account soon became standard doctrine in TGG and English grammar at large, even in theoretically eclectic major reference works like Quirk et al. (1985: 103, 133) or Huddleston & Pullum (2002: 93). Although TGG has altered considerably since then, the 'dummy' DO solution has remained essentially unchanged and almost unchallenged. Lasnik (1999: 179; 2000: 201, fn. 17) has even written that Chomsky's original analysis is just 'correct' and cannot be significantly improved upon. Recent analyses⁶ go even further as to the emptiness of 'dummy' DO, deny it syntactic status, and claim that it is just an empty morph or even a syllable inserted 'late', at Morphology or PF, as a 'last resort' to make the stranded tense affix pronounceable.

From the point of view of descriptive adequacy, the early TGG 'dummy' DO solution was efficient and already had the last resort flavour it has in recent accounts, which explains why it has been kept, along with a syntactically independent Tense head, while most of Chomsky's 'Aux analysis' was replaced in the mid 60's. The strongest objections to it, to my knowledge, are still Culicover's (1976: 107-108) but the Do-Replacement *cum* DO-Deletion alternative that he and Emonds (1976: 217-128) argued for was technically more complex and did not prevail. Their criticisms were sound, though, and still apply to current successors of the initial 'dummy' DO account, but recent versions are objectionable in many other respects, and it is high time to reconsider whether 'dummy' DO is such an optimal and definitive solution as its supporters claim.

This paper argues that it is not. Section 1 will show what the problems are and section 2 will explain how they can be avoided, with further simplifications elsewhere, if so-called 'dummy' DO is a default auxiliary verb inserted 'low'. A full-scale attempt will be made to prove that the 'low' auxiliary DO solution is not only conceptually and descriptively preferable, but also well-motivated on semantic grounds, since auxiliary DO has an elusive, but non-trivial semantic role: It functions as an existential quantifier over events, it is obligatory because the 'e'(vent) variable of VPs has to be properly bound, and it must be inserted 'low' because quantifier-variable binding must be local and no other operator may intervene between the quantifier and its variable.

1. Why the 'dummy' DO solution is not optimal

Observe that the 'dummy' DO theory entails several (in part) mutually supporting stipulations:

- a) that DO is a 'dummy';
- b) that it can be inserted only 'high', in/at Tense, or preceding PHON(T) at PF;
- c) that negation is under the scope of Tense;
- d) that negation, among other ill-defined syntactic objects, blocks the licensing/attachment of tense features, which triggers DO-Support as a 'last resort'; and
- e) that 'dummy' DO is **not** inserted if the derivation contains auxiliaries in any form.

Stipulation a) dismisses the fact that 'dummy' DO is not like other dummies. 'Dummy' IT and 'dummy' THERE carry CAT(egory), AGR(eement), and CASE attributes with relevant syntactic roles, and the 'dummy' preposition OF licenses Case in its complement. Only 'dummy' DO, by hypothesis, has **no** syntactic features, which makes it **unique** among dummies (and among lexical items in general); if 'dummy' DO is lexical, it is quite exceptional, and if it is not, it violates Inclusiveness. As a consequence, DO-Support is an exception to Economy, since a category-less and meaningless object cannot select, be selected, or be attracted by any head, and no feature is satisfied when it applies. Of course, in Minimalist Theory (MT, hereafter) 'phonology is different', but if all the PF rules need is a syllabic core to make PHON(T) pronounceable, the simplest vowel, say 'schwa', will suffice; inserting as much PHON material as /dY/, /dɔ/ or /dɒ/ for that purpose arguably violates Economy at PF.

Stipulation b) is rather implausible, too, as no other 'dummy' or syllable must occur exclusively preceding the PF reflex of anything else, and, anyway, if a syllable must support PHON(T) when finite, it should do as well when the stranded affix is participial or passive, but it does not: 'dummy' DO never surfaces in non-finite form.

Stipulation c) is factually and conceptually questionable: In closely related IE languages, negation precedes the tensed verb at PF and must be higher in the syntax; on the other hand, negation is a 'propositional function' of type <t, t>, and propositions must include a time specification. Significantly, particular values of T may be the focus of negation, which should not happen if T is not in its scope.

Stipulation d) is technically dubious and imprecise: Why negation should be an obstacle in English, but not in other languages, and only in what concerns main verbs, is far from obvious, particularly if *not* is phrasal. On the other hand, what the other interfering categories are ('emphasis'? a wh-Q complex?), and why they interfere, is unclear, since e.g., adverbs and parentheticals do not.

Finally, stipulation e) is a 'global constraint' that blocks DO-support if **any** auxiliary in **any** form has already been inserted. Yet, if derivations result from Merge and grow bottom-up, as assumed in MT, nothing short of a stipulation can have that effect. Since auxiliaries may be selected in non-finite form and **not** be eligible to satisfy T, if one or more nonfinite ones are inserted, T will remain unlicensed/unassigned, and 'dummy' DO will still be called for, which generates ungrammatical sequences of tensed 'dummy' DO and non-finite auxiliaries. Only a stipulation can block such derivations; making 'dummy' DO a 'last resort' *per se* does not, because 'dummy' DO is needed unless the auxiliary is finite, and the auxiliary may **not** be finite.⁷

Thus, the 'dummy' DO solution is far from optimal after all, even as an 'engineering trick', but there is more against it: 1) It is empirically inadequate, since it ignores robust inflectional and syntactic evidence suggesting that 'dummy' DO is not an empty morpheme or a mere syllable, but an auxiliary verb; and 2) it is conceptually objectionable on theory-internal grounds as well, since it entails relaxing general principles of P&PT/MT.

One of the inflectional facts that the 'dummy' DO theory must ignore is that, if 'dummy' DO were just an empty formative or a syllable, the alternation it manifests under different person (cf. /dY/ ~ /dç/) and tense choices (cf. /dY/ ~ /d□d/ ~ /dçn/) would be unjustifiable: Ablaut is a typical inflectional pattern of early Indo-European roots, particularly old irregular verbs like DO, but irregular inflection arises in the Lexicon, **not in PF**, although it has PF reflexes. A second, more general fact also dismissed is that if 'dummy' DO were only a chunk of PHON substance, there would be no explanation for the fact that regular inflectional rules apply to it precisely as they always do to verb stems. Category-less formatives and syllables do not inflect, and non-verbal stems do not inflect for tense and agreement; how, then, can *do*, *does*, *did* be well-formed **unless** 'dummy' DO is a verb stem?

The syntactic evidence against 'dummy' DO is also compelling. A strong argument that it cannot be either an empty morphological formative or a mere syllable is that the resulting inflected forms have auxiliary verb properties **in the syntax** (i.e. the NICE properties of note 1), and they **cannot derive from tense**, which does not by itself induce them on tensed MVs. Where else, then, may such properties come from if 'dummy' DO is added 'late', at Morphology or PF, and, by hypothesis, is not yet in the derivation when the NICE constructions arise? All recent versions of the 'dummy' DO theory have apparently ignored this difficulty.

The 'dummy' DO theory also leaves crucial selection facts unexplained. Why the MV following 'dummy' DO must be a bare infinitive is a mystery if 'dummy' DO is just a morph or a syllable, for such entities should not select VPs at all. Observe that, when 'dummy' DO occurs, the following infinitival VP cannot be selected by any other head but 'dummy' DO itself: Under stipulation e) above, auxiliaries must be absent, by hypothesis; finite T obviously cannot select bare infinitival VPs; and Polarity (assuming, for the sake of argument, that it is attached between VP and T), does not select any inflection in particular, since it can be followed by VPs in any form depending on the auxiliary that precedes it.⁸ When the clause is non-finite, Polarity and I(nfl) may be followed by a participle or a *to*-infinitive, but not by a bare infinitive, cf. *Not going/Not to go*/**Not go was rude*. Only core modals and 'dummy' DO can be followed by a bare infinitive. That core modals have this property is a well-known fact, but why an empty formative or a mere syllable should have it as well is a mystery, or something unbelievably exceptional.

In sum, everything so far suggests that 'dummy' DO is, in fact, an auxiliary verb with selection properties similar to those of core modals, as traditionally assumed, and that it is inserted, not at Morphology or PF, but in the syntax. As soon as this is acknowledged, 'dummy' DO becomes untenable on theory-internal grounds, too. One concerns its presumed insertion site: If it is directly adjoined to T, or fills the v-stem slot selected by the tense suffix, as standard accounts claim,⁹ it may at best satisfy the selection features of the tense suffix,¹⁰ but **not its own**. Under minimalist Merge, the resulting object {DO, T} should project as a T, and DO should become invisible to further computation. By the time DO is attached to T, TP has already been built, and what follows T is its own complement. There is, thus, no way in which auxiliary DO can take the complement it selects if it is directly attached to T; how, then, can its SEL(ection) attributes remain unsatisfied? But, of course, they do **not** remain unsatisfied: Any verb following it carries bare infinitival inflection, which can only be licensed if the V(P) is its complement, as explained. This entails that auxiliary DO, even if it eventually 'lands' in/preceding/prefixed to T, must first satisfy its own selection feature with an appropriate complement, and that must happen **below** T; in fact, unless auxiliary DO is itself a modal, as occasionally suggested (cf. note 9), it must happen below the lowest M,¹¹ as well, since modals are obligatorily tensed in current English and cannot complement any verb, auxiliary or not.

According to the standard doctrine, 'dummy' DO is inserted 'high' because its **only** function is that of a last-resort tense-carrier, but that characterization is questionable, because it rests on **tense being stranded**, which in turn depends on **its being 'higher' than Polarity** (and the other 'obstacles', ignored here for brevity's sake). When 'dummy' DO appears in negative clauses, tense is 'stranded' only if Polarity obstructs overt V raising but not auxiliary raising. Now, whether English *not* is a head or a phrase is moot, cf. Zanuttini: (2001: 524-529). This paper will assume that it is a phrase,¹² but for current purposes it hardly matters: If it is a head¹³ it should interfere with both processes, whereas, if it is a phrase, it should interfere with neither, as in earlier English. The fact that nowadays only auxiliaries can raise across negation forced Pollock and Chomsky to propose rather baroque solutions,¹⁴ but, before following their course, it is worth while reconsidering whether T is, indeed, higher than Polarity, because, if the opposite holds, negation cannot interfere with **any** V raising to T, and either 'dummy' DO is not a last resort tense-carrier at all, or it flagrantly violates Economy.

The relative scope of Polarity and T is tricky to establish for three reasons: 1) because, although it is clear that Polarity is a 'propositional function', which syntactic projections are 'propositional' is not clear at all;¹⁵ 2) because a clause contains at least two T-like heads (and possible negation sites), or more, if it has auxiliaries, cf. Chomsky (1995: 350-351); and 3) because T is inherently relational and is in the scope of negation even if one of its two arguments precedes negation at PF.¹⁶ Thus, at UG, variation is expected, and found, as to the relative surface position of overt tense and polarity, but, even leaving semantic arguments aside, there is no doubt that negation precedes and asymmetrically c-commands tensed verbs (auxiliary or not) in many IE languages (e.g., *non* in Latin or Italian, *no* in Spanish, *ne* in French and earlier English, etc.) and there is evidence suggesting that, in current English, too, **all T-like heads are under Polarity**.¹⁷ If so, in negative contexts tense is not 'stranded' because negation blocks verb movement or access of T to its carrier. Of course, English tensed auxiliaries (and MV BE, cf. *infra*) precede *not*

at PF, which, assuming Kayne's LCA (= Linear Correspondence Axiom, cf. Kayne 1994: 4-6), entails **some** verb-hosting head above Polarity, but it need not be T; AGR_S has also been considered,¹⁸ as well as Bowers' Predication, Force, and, of course, Comp.

Significantly, other factors obviously involved in the appearance of 'dummy' DO at PF (e.g., interrogative or emphatic features) are associated with Force or Comp, both structurally higher than T, and hardly candidates to interfere with V-to-T raising (or affix lowering), so-called 'spurious' DO does not arise in a tense-stranding context, either, and close parallels of DO-Support have been attested in languages in which negation is not an obstacle to V-to-T raising.¹⁹ Thus, the view of 'dummy' DO as a last resort tense-carrier is too tightly dependent on a parochial fact, the respective position of tensed auxiliaries and *not* in English, that may well be deceptive.

Of course, if auxiliary DO is not primarily a tense-carrier after all, and is not inserted at T, but lower, why it is **always** tensed and incompatible with **higher** auxiliaries²⁰ needs a proper explanation, because auxiliaries, with some restrictions not discussed here,²¹ may co-occur. Why, then, should auxiliary DO be unable to follow modals, auxiliary HAVE, BE, or even 'passive' BE? The 'dummy' DO theory, again, simply avoids the problem by circular stipulation: 'Dummy' DO is obligatorily tensed because it is allowed nowhere but at T, and auxiliaries do not occur above/before DO+T because T is higher than (and therefore precedes) auxiliaries. However, once the insertion of DO directly at T has been shown to be untenable, those facts remain to be explained.

According to one explanatory strategy, the restricted distribution of auxiliary DO follows from an irreducible lexical fact: Like modals, it cannot appear in non-finite form because it no longer has such forms,²² and it never follows other auxiliaries because they all happen to select non-finite forms. Defectiveness-based explanations, however, are to be taken with a pinch of salt, because defectiveness may be the **consequence**, rather than the cause, of overt syntactic distribution: A lexical item may never appear with a certain inflection because syntactic or semantic obstacles of various kinds prevent it from reaching the position in which that inflection can be licensed by an appropriate head. In the case of auxiliary DO, anyway, its defectiveness is less convincing than that of modals, since it derives from the same source as other non-defective DO homonyms, and nothing suggests a different inflectional paradigm.²³ Significantly, whereas modals have lost person and number distinctions, or have them only when they function as MVs (*dare*, *need*), auxiliary DO always has exactly the same paradigm as the homonymous MV in its finite forms.²⁴ Of course, it remains true that it is never attested in non-finite form at present, but, before assuming that it has turned defective in post-mediaeval times, it is wise to exclude possibly more principled explanations, according to the generally sound methodological maxim of accepting exceptions only at the lowest possible level of generalization and the orthodox research strategy in TGG, which has always been to look for explanations first in the **structure** that UG imposes, and only then, if unavoidable, let low-level lexical idiosyncrasies account for residues.

Be that as it may, the 'dummy' DO theory must still explain why, if DO is inserted at T, it is also incompatible with **lower** (at PF: following) auxiliaries, since TP may contain them. Modals, plausibly defective for well-known historical reasons, might be excluded on selection grounds, since DO selects infinitives and they do not have them, but auxiliary HAVE and BE have infinitival forms that meet the selection requirements of DO and should be possible, but they are not. Why? As stated, the 'dummy' DO theory simply stipulates that they cannot occur (cf. stipulation e), but, as observed above, not being eligible to satisfy Tense, they should be allowed.

In sum: The 'dummy' DO theory was, and still is, at best a 'clever engineering trick', but it entails an exceptional object inserted in an exceptional way, arguably violates Inclusiveness and/or Economy, invokes a suspicious 'global' version of Last Resort, fails to explain the inflections, the NICE properties, and the complement that obligatorily follows this kind of DO, and merely stipulates, rather than explaining, its incompatibility with other auxiliaries. All this makes it not only far from optimal, but also empirically inadequate, and conceptually suspicious, and it is somewhat surprising that it should have remained virtually unchallenged for well over fifty years.

2. The 'low auxiliary DO' hypothesis

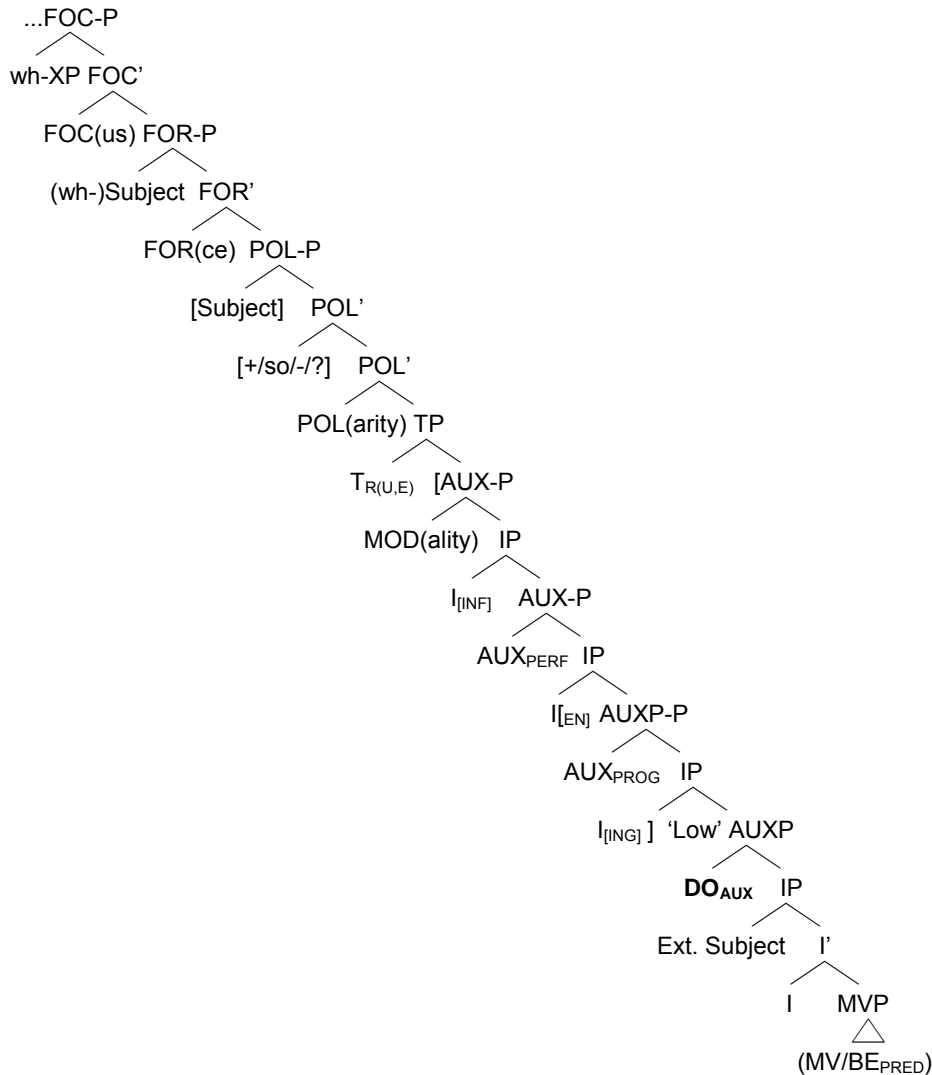
No matter what theoretical framework is adopted, it is methodologically desirable to avoid exceptions in both the Lexicon and the Computational Component (CC, hereafter). In the broadly Chomskian view of Language that inspires this paper, the CC is simple, and arguably near 'optimal'. It consists of just two high-level principles: 1) 'value/license unvalued/unlicensed attributes/values' (i.e., 'Satisfaction'),²⁵ and 2) 'compute as little as possible' (i.e., 'Economy'). On the contrary, the Lexicon must remain 'rich', a currently unorthodox view.²⁶

As to clause structure, rather moderate changes in standard P&P/Minimalist textbook accounts suffice to offer a much neater explanation of the facts and avoid all the stipulations and conceptual inadequacies just discussed. Of course, a full account of auxiliary DO and its interactions entails decisions on a great deal of English syntax and semantics about which this paper has nothing original to say or has no space to say it, so in non-crucial respects standard P&P/MT will be assumed by default unless the contrary is explicitly noted. The terminology to be used will also be mostly traditional and hopefully non-controversial; theory-bound terms will be used in deliberately versatile and conservative ways, since the proposal to be defended here aims at relevance to different implementations of the key ideas of generative grammar. Finally, terms like 'quantifier', 'variable', 'bind', 'scope', etc., will be used here with the values they have in standard logic and formal semantics textbooks.

For the reader's benefit, the overall clause structure that must be assumed here is anticipated below in Figure 1), a 'map' that largely summarizes the following analysis. Observe that the representation chosen is deliberately conservative (i.e., it contains classic X-bar representations and old-fashioned syntactic labels like AUX, VP) and is also slightly simplified in certain respects irrelevant to the argumentation that follows. In bottom-up order: a) VP-internal structure, including transitivity, shells, complex event-structure, etc., is irrelevant here and is hidden under MVP; b) AGR_S/Predication and the T-like head are not shown under the lowest IP, but must be there; c) when DO_{AUX} surfaces, the higher AUXPs are not built (cf. *infra*), which leaves 'low' AUXP directly under TP; d) since English modals cannot nowadays iterate, in Fig. 1 MOD stands for all (epistemic, deontic) modal predicates; e) specifiers have been left out, except the external subject of the lowest IP, with its upper 'copies' in Spec Tense, Spec Polarity and Spec Force, and focused wh-XPs landing in Spec Focus; f) possible adjuncts have also been omitted, except

those of Polarity (i.e., negation = *not*, and intensification = *so*); g) FOC_P is built only 'on demand', as explained below; and h) TOP(ic)-P and other XPs between FOC_P and CP (cf. Rizzi 1997; Cinque 1999), including CP itself, are irrelevant to present concerns and have been omitted.

Fig. 1 English clause structure



The alternative assumptions that underlie the clause structure in Fig. 1 and implement the 'low' DO_{AUX} alternative proposed here follow. Observe that most are just reinstatements of well-established properties of auxiliary DO and tense that the 'dummy' DO theory just fails to acknowledge.

1) So-called 'dummy' DO is not just an empty formative or a syllable, but a full lexical item with well-defined properties at all levels: a) It has a PHON(etic) matrix that may or may not be spelt out at PF; b) it has syntactic CAT(egory) and subcategory attributes valued V and AUX, respectively; c) it is, morphologically speaking, a stem requiring irregular inflection (Ablaut); d) it syntactically and semantically selects a bare infinitival IP and an 'event', respectively; and, more controversially, e) it has a non-trivial SEM(antic) attribute, whose value is roughly OCCUR, that enables DO_{AUX} to function as an **existential quantifier over possible events** and bind the 'e'(vent) variable of its IP(<VP) complement. The fact that all verbs (except BE, cf. *infra*) entail an existential predicate OCCUR also allows DO_{AUX} to function as a general-purpose V(P) proxy, as noted by Pollock (1989: 399-400).

Of those lexical properties, only SEM and S(ematic)-SEL(ection) need justification, since perhaps everybody else's view is that this type of DO is semantically empty, and, indeed, if English clauses like *John smokes/does not smoke* are compared with e.g., their Spanish or German counterparts (*Juan fuma/no fuma*, *Hans raucht/raucht nicht*, etc.) DO_{AUX} seems to contribute no meaning at all; what evidence is there that it is semantically relevant, after all?

A theory like P&P/MT, with different LF and PF representations, *eo ipso* accepts the fact that in Language, as in other domains, there is 'more than meets the eye', and, in fact, a long time ago Davidson (1967) offered convincing evidence that the LF of action sentences must contain an invisible higher-order 'event' argument represented by a variable 'e' bound by a restricted quantifier '∃e'. Unfortunately, he just added 'e' to the argument structure of verbs generally increasing their adicity by one, which disguised the special status of the 'e' argument somewhat, but In Parsons' (1990) re-elaboration of the Davidsonian approach the 'e' variable ('s', for 'states') is no longer an argument of the verb, in particular, but an argument of all the predicates that define the semantic roles of clause constituents. The verb, which specifies the kind of event involved, is exceptionally represented by a monadic predicate of 'e',

whereas subjects, complements, and modifiers are represented as dyadic predicates of 'e' and some other entity. Thus, the (simplified) LFs of *John invited Mary* and *John did not invite Mary* are, respectively, (2a) and (2b):

- (2) a. $\exists e$ [Inviting (e) & Agent (e, John) & Theme (e, Mary) & Time (e, t)]
 b. $\neg \exists e$ [Inviting (e) & Agent (e, John) & Theme (e, Mary) & Time (e,t)]

Parsons' 'flat' conjunctive LFs ignore the elaborate binary-branching structures that current syntactic theory postulates in clauses and, to the extent the latter are motivated, are rather simplistic from an ontological linguistic viewpoint and violate strict compositionality, but they do represent the right truth-conditions and show how the most obvious clause constituents contribute to them. Indeed, with one exception, everything in Parsons' formulae can be plausibly correlated with a constituent of the respective syntactic representations²⁷ (although the opposite does not hold): There is a MV constituent (*invite*), a subject (*John*) with the role of Agent, a complement (*Mary*) with the role of Theme, a Time constituent with a value specified in relation to utterance time (*-ed*), and, in the negative version, a Polarity constituent (*not*). As to the symbol 'e' itself, the null hypothesis is that it corresponds to IPs immediately dominating the main VPs, since **linguistically construed** events entail a 'perspective' and IPs are the smallest phrases with AGR, a T-like (I) head, and VP-external subjects. If so, the semantics-syntax correspondence is reasonably bi-unique **with an interesting exception: There is no syntactic constituent corresponding to the existential quantifier $\exists e$** . And yet, there is no doubt that *John invited Mary* entails the existence (for events = occurrence) of an event.²⁸ How can the existential quantifier correspond to **nothing** in the syntactic representation?

Obviously, in a linguistic theory like P&PT/MT, an autonomous SEM or LF module of the CC might well add a quantifier, but the optimal hypothesis is that CC adds nothing to the information supplied by the Lexicon (= Inclusiveness), just as it is optimal to assume that syntactic objects (e.g., DO_{AUX}) have computable SEM content, since, within a strictly 'internalist' theory of Language, 'semantics' is just the syntax of SEM (= language-internal meaning), as Chomsky has repeatedly insisted, cf. e.g. Chomsky (1993: 52; 2000: 174; 2002: 158-159).

Hence, **this paper claims instead that the quantifier $\exists e$ of Parsons' LFs (2a, b) corresponds in the syntax to DO_{AUX}**, which selects the lowest IP when it contains an 'e' variable. Correspondingly, DO_{AUX} is not inserted 'high', but 'low', in the AUX selecting the lowest IP, and it is obligatory, and must be 'low', because the 'e' variable must be locally bound by an appropriate quantifier. Since the restricted quantifier $\exists e$ binds events, but not states, stative auxiliaries (modality, aspect, voice) cannot function as heads of complements of DO_{AUX}. In other words, the IP complement of DO_{AUX} must directly dominate the main VP and inherit its 'e' variable. This explains why auxiliaries are banned from the start between DO_{AUX} and the MV; inflectional selection by itself would not, as auxiliary HAVE and BE have bare infinitival forms that meet the selection requirements of DO_{AUX} in this respect.

2) An existential quantifier is obligatory with states, too, as their 's' variable must also be locally bound. Thus, when 'low' AUX is not filled by DO_{AUX}, it must host some other quantifier. This paper claims that, the complementary quantifier ($\exists s$) is 'predicative' BE (BE_{PRED}, hereafter)²⁹, which locally binds the 's' variable of stative IPs. Roughly: whereas DO_{AUX} means OCCUR(event), BE_{PRED} means BE-THE-CASE(state).³⁰ BE_{PRED} selects IP complements, too, but not infinitival (i.e., ultimately 'verbal') ones; instead, the complements of BE_{PRED} are headed by Bowers' (1993) 'Pr(edication)', which selects properties of any category except VP.³¹

3) DO_{AUX} and BE_{PRED}, therefore, are in complementary distribution in 'low' AUX, but the former is a 'low' AUX, whereas the latter is a MV that must raise into 'low' AUX when the latter is empty. BE_{PRED} is the only MV that has this property, may raise into T, Polarity, Force, and Focus, and therefore occurs in all the NICE contexts. This unique status of BE_{PRED} is a consequence of three facts: 1) being a state verb, it has an 's', rather than an 'e' variable and cannot be bound by $\exists e$, which excludes DO_{AUX} from 'low' AUX in this case; 2) an additional existential quantifier ' $\exists s$ ' must be assumed to bind states anyway and BE_{PRED} has exactly the right semantics; and 3) being semantically 'atomic',³² BE cannot have **any** pro-form and must act as its own proxy and raise when there is no auxiliary.

4) It follows that DO_{AUX} cannot be triggered by a stranded tense affix (although it always carries tense if overt), because it is required **much earlier**, in 'low' AUX. Furthermore, **tense is never stranded**, anyway; it simply surfaces on the closest overt potential tense-carrier, which happens to be DO_{AUX} when it must be overt (for **other** reasons). It is necessary to explain what the 'other reasons' are (cf. *infra*), but the overt site of tense follows from Chomsky's current assumption that inflectional attributes get their values from the closest functional heads above them,³³ i.e., finite I (= T), in the case of overt DO_{AUX}, and various non-finite I heads selected by other auxiliaries, if present. In all cases, Economy allows attribute valuation only in the closest **overt** potential target (= a verb with still **unvalued** inflectional attributes), which produces the 'affix hopping' effect without movement. Possibly intervening adverbials, parentheticals, etc., do not contain such attributes and are simply invisible to the process and irrelevant.

5) Categories may have attributes with marked and unmarked values, and, in virtue of Economy, the latter are assumed by default and **may** need no expression at PF. This general design feature of Language applies to DO_{AUX}, too, which has an unmarked variant with [PHON: \emptyset] and a marked one visible at PF. Thus, although DO_{AUX} is obligatory in 'low' AUX with eventive IP complements, **it does not always become overt**. What makes it visible at PF is a conjunction of **absence of higher auxiliaries** (hence, immediacy to T, and **finiteness**) and **other** clause-level circumstances, marked Polarity and/or marked Force, with the ensuing Focus phrase it triggers (cf. *infra*). For the sake of explicitness, let us assume that lexical items, including DO_{AUX}, have a feature [PF: \pm] that triggers the corresponding activation/silencing instructions at PF.³⁴

6) Rather than a 'last resort', therefore, DO_{AUX} is a 'first resort', i.e., it is the 'unmarked' auxiliary that encodes existential quantification.³⁵ Clauses may additionally contain higher 'marked' ones, i.e., BE_{PROG}, HAVE_{PERF}, and modals. All are state predicates, select IPs with specific I heads, translate into LF as higher-order predicates of $\exists e$ [P (e) & ... & Time (e, t)] (= 'low' AUXP), and may co-occur in the order M > HAVE > BE, although why this is so will not be discussed here.

7) All events/states exist in a specific time interval, and, in English, inherent event/state time ($t_{e/s}$) must be roughly situated on the time dimension with respect to utterance-time (t_u). The relation between the two time-intervals

$R(t_{e/s}, t_u)$ (read: ' $t_{e/s}$ precedes/follows/overlaps with t_u ') is expressed by inflectional choices at the highest 'tense' head, $T_{R(U,E)}$, hereafter, which is necessarily finite (deictic) in a main clause. In other words, at least two T-like heads, and possibly more, are semantically involved,³⁶ although only one, the value of the function $T_{R(U,E)}$, is realized at PF. However, the 'inherent time' of events/states is still syntactically represented, along with 'agreement'/predication, as a component of the non-finite I of the IP complements of DO_{AUX} and marked auxiliaries (cf. Infl = [Agr, T] in Chomsky 1981, 1986, 1995 and subsequent work).

8) The existence of an event or state at a specific interval of time $t_{e/s}$ may, of course, be denied.³⁷ Negation, therefore, must take scope over the existential quantifiers $\exists e$ or $\exists s$, which, in their turn, must take scope over the corresponding events/states (IPs), **with their inherent time components**. That yields the LF sequence $\neg \dots (\exists e/s)$ [e/s], and a partial syntactic structure [NOT [$T_{R(U,E)}$ [...[low' AUX [IP $t_{e/s}$]]]], where '...' stands for possibly intervening higher-order predicates (= marked auxiliaries), cf. Fig. 1. At least $t_{e/s}$, and in some languages (e.g., Spanish, Italian,...) $T_{R(U,E)}$, as well, must be under the scope of Polarity, and, in virtue of Kayne's LCA, its PF reflex must follow that of negation.

9) As to negation, it corresponds to one of the marked values (i.e., [POL: -]) of Polarity, which is 'positive' [POL: +] in the unmarked case. The other marked values are 'indeterminate' polarity [POL: ?], instantiated in ('polar') questions and *whether* clauses, and 'contrastive' (positive) Polarity [POL: +!], in cases like *She did want that job*. Of course, Polarity, with **some** value, is necessarily involved whether spelt out or not, since POLP, rather than VP, vP, IP, AUXP or TP, is the smallest phrase with 'propositional' content.³⁸ As usual, the default value of Polarity need not be, and therefore is not, spelt out, but negative polarity is a non-default higher-order predicate of $\exists e$ [P (e) & ... & Time (e, t)] and must be represented at PF. Correspondingly, in the syntax, *not* must be inserted **as a modifier** in POLP and an overt 'proxy' of the 'negated' AUXP (DO_{AUX}, if there are no higher auxiliaries) must raise into Polarity itself and become its 'subject'.³⁹

This makes marked Polarity one of the factors that **may** lead to DO_{AUX} being spelt out. If Polarity is negative, it always does; if it is indeterminate, in subordinate clauses there is an alternative to overt DO, but indeterminate polarity must, nevertheless, always be visible in syntax and PF, either represented by a fronted auxiliary, which may be DO_{AUX}, in questions, or by /əðə/ (cf. *wh-ether*), initially an adjunct of POLP, then attracted into Spec FOC(us), in so-called 'indirect questions', cf. *infra*. Finally, marked contrastive positive Polarity is visible in syntax and at PF also in one of two ways: by extra stress on the overt auxiliary attracted to POL (cf. *She did want that job*), or by an intensifier (*so*) that alternates with *not* and *-ether* modifying POL and makes the overt realization of auxiliary DO unnecessary (cf. *She so wanted that job*).

10) What, in principle, 'closes' a main clause is the attachment of an illocutionary Force head that also has default and marked values. The default value is, of course, assertive [F: A], not represented at PF. Marked values include interrogative [F: Q], emphatic [F: E], imperative [F: I], counterfactual [F: C], desiderative [F: D], etc., although this paper has nothing special to add on the matter. What it must add, since it is relevant to the present explanation, is that Force generally **attracts the subject** into its specifier and whatever head has reached Polarity (*via* $T_{R(U,E)}$) into its head (in order to satisfy its [F:] attribute and 'agree' with the specifier).

In the absence of higher auxiliaries, what lands in T, Polarity and Force is DO_{AUX}, although not necessarily specified as [PF: +], since $T_{R(U,E)}$ may hop onto MV, as shown, and does not by itself trigger an overt DO_{AUX}. However, if Polarity is negative, DO_{AUX} will be [PF: +], and the same applies if Polarity is not negative but Force is marked, with one exception (cf. *infra*). Of course, marked Force and marked Polarity may co-occur (e.g., in yes/no and negative questions) and then act in a cumulative fashion: An auxiliary is first attracted into Polarity *via* $T_{R(U,E)}$, and then into Force. If the attractee happens to be DO_{AUX} it must also be in its eventually overt [PF: +] version.

11) A clause, however, may not close with a subject and an auxiliary landing in Force-P, because marked Force may have further consequences, i.e. the building of a FOC(us)P to host marked *wh*-XP foci (NegPs, etc.) and the finite auxiliary in SAI cases (e.g., yes/no questions, *wh*-questions, neg-preposing cases, counterfactuals, desideratives, imperatives, etc.). Focus/SAI phenomena are too varied to be fully discussed here, but questions will do to illustrate what happens in such cases.

As is well-known, questions are 'open sentences', and their illocutionary [F: Q] attribute ('Wh') may 'focus' on unvalued variables associated with different clause constituents (arguments, modifiers, or the polarity adjunct), as Katz & Postal (1964) showed long ago; this 'open' status must also be indicated at PF. When the question focuses on the subject, the default case (= Default Interrogative Focus; DIF, hereafter), Focus need not be overt and Focus-P is **not** built, cf. Grimshaw (1997). This is presumably because the *wh*-subject directly satisfies [F: Q] and its own DIF feature through 'spec-head agreement' with Force [F: Q]. In that case, if the auxiliary is DO_{AUX} it need not be spelt out, either, unless Polarity is negative or contrastive positive and has already triggered [PF: +] by itself.⁴⁰

If the question focuses on a non-subject, on the contrary, Spec Force is occupied by the subject, and a FOC_P must be built above to allow the focused *wh*-XP to license **its marked FOC and Q** features in Spec FOC, through spec-head 'agreement'. If so, the tensed auxiliary carrying [F: Q] must itself raise to from FOR(ce) to FOC(us) to agree with its *wh*-specifier, and if it happens to be DO_{AUX} it will be spelt out at PF. Main questions with marked focus on the Polarity adjunct (*-ether*, eventually *whether*) are exceptional, but only in that the Spec Focus (i.e., *wh-ether*) is no longer spelt out in current English (although it was in OE). Observe, however, that the finite auxiliary must still raise from Force into Focus and is overtly realized at PF (= SAI; cf. *Do you drive? *You do drive?*).

12) So-called 'indirect questions', on the contrary, are **not** real questions, and do not contain [F: Q]. However, they still are 'open sentences' and their focused *wh*-XP must land in Spec Focus to satisfy its FOC feature (unless it is the subject and can stay in Spec Force, as shown). Such *wh*-XPs, though, cannot carry a Q feature, as it would be unsatisfiable in the absence of [F: Q] at FOR(ce). Thus, in indirect questions the finite auxiliary is not attracted beyond Force, and no SAI effects arise. DO_{AUX} may still be overt in Force, but only if Polarity is negative or contrastive and triggers it by itself (cf. *She wonders why I do not drive, She wonders why I do drive*).

13) In the structure shown in Fig.1, movement occurs mostly as in standard P&P/Minimalist accounts, i.e., the subject starts as a specifier of VP/vP and raises (under Shortest Movement < Economy) from Spec to Spec satisfying

the EPP features of all intermediate Is, 'checks' its nominative Case feature in Spec TP, etc.; the only change introduced here is that it finally **lands in Spec Force**, rather than in Spec Tense/Agreement.

14) If DO_{AUX} is the highest auxiliary but is not [PF: +] and eventually is not spelled out, MV must carry the T_{R(U,E)} features (= Affix Lowering), as no **overt** verbal head intervenes between T_{R(U,E)} and the MV.

15) Since T_{R(U,E)} is **not** by itself an attractor, the MV need not, and therefore, granted Economy, does not raise from its VP to check tense, but, crucially, observe that it is not allowed to raise even if Polarity or Force are marked and attract a verb, because it would violate the Head Movement Constraint (HMC, hereafter) if it did skipping the intervening DO_{AUX}. That explains in **structural** terms, rather than by Pollock's or Chomsky's lexical stipulations, why English MVs cannot leave their VPs even in negative or interrogative clauses. It follows that in languages lacking DO_{AUX}, when no higher auxiliaries are present, MV is free to raise, and attracted by marked Polarity or Force, reaches T_{R(U,E)}, Polarity, Force, and Focus, if necessary (e.g., in Spanish, Italian, German, and earlier English).

16) The fact that overt DO_{AUX} is always finite reduces to the circumstance that, if it is spelled out, it must raise *via* T_{R(U,E)}. Granted the HMC (< Economy), it must also have been the closest potential carrier of T_{R(U,E)} features and cannot but realize them; if it were not overt, of course, T_{R(U,E)} would have to remain unlicensed. This is the true side of the 'last resort tense-carrier' hypothesis, but things do not happen because tense is stranded, as shown. It never is. 'Stranding' is an artefact of Chomsky's initial AUX analysis.

17) It is also unnecessary to stipulate that DO_{AUX} is defective, because if it is spelled out there cannot be a closer I head than T_{R(U,E)} to license any other inflectional form. The fact that DO_{AUX} never surfaces in non-finite forms, thus, also has a structural explanation rather than 'last resort' or a defectiveness-based one: Non-finite inflections are assigned by I heads selected by marked auxiliaries **above** 'low' AUX; if they are there, of course, DO_{AUX} can never become the closest potential attractee of Polarity or Force, nor the closest potential carrier of T_{R(U,E)}, and stays in its default form [PF: -] > [PHON: Ø], which immediately disables it as a potential carrier of **any** other inflection. The non-finite inflection (infinitival, *-ing*, participial, depending on which marked auxiliary and I head are above) will then show, across the intervening covert DO_{AUX}, on the next V down, i.e., the MV.

18) The structure of the English clause in Fig. 1 is such that, granted the HMC (< Shortest Movement < Economy), DO_{AUX} can carry [PF: +] and become overt only if no higher auxiliary blocks its ascent from 'low' AUX into T_{R(U,E)}, Polarity, Force, and Focus, which **necessarily bans all other auxiliaries between AUX and Force/FOC**.

19) On the other hand, since, by assumption, DO_{AUX} functions as a quantifier over events and must locally bind the 'e' variable of its IP complement, **no auxiliaries may intervene between DO_{AUX} and the MV, either**, which fully explains why it is incompatible with any other auxiliaries **anywhere** in the clause.

20) A parallel argument applies to BE_{PRED}: If it raises from its VP and becomes a quantifier in 'low' AUX, it will necessarily show at PF in Force (or Focus, in SAI cases), will have to raise *via* T_{R(U,E)} and be finite, and will also exclude all auxiliaries along its path.

Although the explicit listing of details and casuistry that precedes may give the impression of complexity, the categories and properties invoked are empirically well-established, phrases emerge smoothly from lexical properties, Satisfaction and Economy, the analysis of questions, emphasis, etc., broadly revives ideas due to Klima (1964) and Katz & Postal (1964), the 'low DO' idea is a technically updated and semantically better grounded version of the DO-Replacement & Do-Deletion analysis of Emonds and Culicover, and the structure in Fig. (1) differs in only minor ways from standard textbook analyses like those in Haegeman & Guéron (1999) or Lasnik, Uriagereka & Boeckx (2005). And yet, whereas the 'dummy' DO theory must resort to multiple stipulations and relax high-level principles like Inclusiveness, Satisfaction, and Economy, the 'low' DO_{AUX} hypothesis derives all the facts from plausible lexical items, avoids exceptions and stipulations, and does not have to relax any of the key principles.

Let us recapitulate before closing:

1) It need not treat DO as an exceptional formative or a mere syllable; DO_{AUX} is an ordinary lexical item subject to general principles. This immediately removes several other inadequacies of the 'dummy Do' theory, i.e., 2), 3), 4), 6), and 7).

2) DO_{AUX} has morpho-syntactic and semantic properties that can satisfy the selection features of the tense suffix, whereas a dummy formative or a mere syllable does not.

3) Hence, its attachment to tense now obeys Satisfaction and Economy, whereas there is no reason to expect a dummy or a syllable to be so attached.

4) So-called 'dummy' DO is inflected as a verb because it is a verb (i.e., by rule), whereas a category-less formative or a syllable should not be inflected at all.

5) The 'low AUX' analysis need not stipulate that DO_{AUX} is defective: If overt, DO_{AUX} must be tensed, or T_{R(U,E)} will remain unlicensed. DO_{AUX} appears in finite form when it is the closest verb to a finite T (i.e., by rule), according to the optimal principle that inflectional values are assigned by certain heads to the corresponding unvalued attributes of the closest overt potential carriers they c-command (by Satisfaction and Economy).

6) DO_{AUX} forms have the NICE properties because all auxiliaries have them (i.e., by rule), whereas a dummy or a syllable should not have them, even if attached to tense, as tense itself does not have them either.

7) The fact that so-called 'dummy' DO is invariably followed by a bare infinitive ceases to be a mystery: DO_{AUX} is followed by an infinitival IP because that is what it selects (i.e., by rule); the 'dummy' DO theory, on the contrary, must ignore it or stipulate it, since dummies/syllables should not select anything at all.

8) The alternation of tensed DO_{AUX} and tensed MVs in finite clauses without other auxiliaries now follows from principle: The MV will be tensed unless marked values in Polarity and/or Force make overt DO_{AUX} intervene.

9) What prevents English MVs from raising from their VPs up to Force or Focus leaving adverbs and negation behind is not their intrinsic lexical properties (e.g., their theta-grid), nor the presumed weakness of English Agr, as assumed by Pollock and Chomsky and many others since, but a) a much more robust structural reason, i.e., that the obligatory, although often invisible, DO_{AUX} in 'low AUX' stands in their way (by rule: the Head Movement Constraint); and b) Economy, i.e. MVs need not leave their VP because tense can reach them *in situ* anyway.

10) When MV is tensed, no ECP violations result from affix lowering, since there is no such movement, and therefore there is no need to remove them by *ad hoc* LF-raising of V to T and Agr-trace deletion.

11) The fact that DO_{AUX} never precedes other auxiliaries no longer has to be stipulated by making it a 'last resort' and forbidding the auxiliaries by *fiat*: DO_{AUX} never precedes other auxiliaries because it cannot raise from 'low' AUX across them if they are present (i.e., by rule: the Head Movement Constraint); thus, an auxiliary following DO_{AUX} at PF must have been attached between DO_{AUX} and the MVP, which is impossible by assumption if AUX must locally bind the 'e' variable of its IP(<VP) complement.

12) Finally, the fact that DO_{AUX} never follows any auxiliary, either, need no longer be derived by stipulating that it is inserted only at T_{R(U,E)} or that it is defective: Any auxiliary preceding DO_{AUX} at PF must have been higher than 'low' AUX in the syntax and must have prevented DO_{AUX} from being attracted to marked Polarity/Force, specified as [PF: +] and spelt out at PF.

Interestingly, such results (and others, e.g., an explanation of the unique status of BE_{PRED} and of why it has no null form, etc.) are obtained here at a very low cost. Leaving aside SAI effects and their exceptions, which require delicate engineering in Force/Focus/Comp **under any account**, the 'cost' basically reduces to: a) reinstating so-called 'dummy' DO as a full lexical item, which is no 'cost', since it immediately explains inflectional, selectional, and syntactic facts that the 'dummy' DO theory leaves unexplained; b) assuming that it means 'occur' and functions as an existential quantifier over events, which is no cost, either, as that hypothesis fills an important gap in the syntax-semantics correspondence that should be filled anyway; and c) assuming that what triggers the externalisation of DO_{AUX} at PF is not the stranding of the tense suffix, which is an artefact of the initial AUX analysis, but the choice of marked values in Polarity and Force, which we know are involved anyway. Everything else follows from principles like Selection, Satisfaction, Unification, Displacement, Economy (> HMC), etc., broadly accepted in P&P and MT or even in generative grammar at large.

NOTES

¹ 'NICE' is an acronym for the capacity to precede *not*, undergo Subject Auxiliary Inversion, contract with *not* and license VP-ellipsis.

² Cf. *Don't have finished before your classmates do! Don't be waiting when I come back, Don't be offended.*

³ Cf. Chomsky (1975[1955]: 302, 553-555); Klima (1964); Katz & Postal (1964: 74-77); Stockwell, Schachter & Partee (1973: 660ff.); Emonds (1976: 213, fn. 11); Culicover (1976: 151-152).

⁴ For details on how bare *do*, *do so*, *do it* and *do that* differ in use, cf. Quirk et al. (1985: 874-879) and Huddleston & Pullum (2002: 1523-1535).

⁵ Cf. Chomsky (1975[1955]: 421, 439, 445-448); Chomsky (1957: 39, 62-65); Chomsky (1965: 107ff.)

⁶ Cf. Bobaljik (1995: 59-74); Chomsky (1999: 30-31); Lasnik (2000: 191-194); Radford (2004: 174).

⁷ This argument applies whether verbs are inserted in derivations with all their inflections on, as in Chomsky (1995), or acquire their inflectional values later in context, as in Chomsky (1999) and subsequent work: If only uninflected stems are selected, nothing should block the insertion of an appropriate Infl that assigns to the auxiliary whatever inflectional features it needs.

⁸ In a P&P/MT framework, if all inflection is uniformly handled the way tense is, infinitives and participles also have inflectional features to check and appropriate I heads are needed above them to license/assign such features. The real complements of auxiliaries will then be IPs with selected I's (-INF, -EN, -ING, -PASS) as heads, and the visible VPs after auxiliaries will actually be the complements of such I's. Hence, a clause with several auxiliaries will contain one IP with a T-like and an AGR-like head after **each** auxiliary, cf. Chomsky (1995: 350-351), Haegeman & Guéron (1999: 314-315). Semantically, that hypothesis makes sense, as it simplifies the ontology and the treatment of event times and negation, and, syntactically, it entails that the EPP will apply to all I's and cyclic subject-raising and Q-float phenomena (cf. Sportiche 1988) will follow.

⁹ Actually, that is the best known, but not the only insertion site in the by now immense literature on the matter. Broadly speaking, analyses can be grouped into two categories, depending on whether they attach/insert DO 'high' (above negation, under AUX or INFL, typically at/under T, but also at/under AGR, M, and even C) or 'low' (below negation, usually above ASPP, but in some cases under AGRo, and even under VP). Among the former are the pioneering analyses in Chomsky (1955; 1957), Klima (1964), and Chomsky (1965), already cited, and those in Jackendoff (1972; 1977), Emonds (1976), Culicover (1976), Akmajian, Steele & Wasow (1979), Chomsky (1981; 1986), Zagana (1988), Chomsky (1991; 1992; 1995), Bobaljik (1995), Grimshaw (1997), Haegeman & Guéron (1999), Lasnik (1999; 2000), Embick & Noyer (2001), Guasti & Rizzi (2002), Radford (2004), Schütze (2004), surely a non-exhaustive list. As stated, 'high' usually means at/next to T, especially in textbook accounts, but Culicover (1976: 107-108) treats DO as an underlying Modal, Emonds (1976: 217) and recently Culicover (2007: 32) as a default AUX deleted when HAVE or BE occur (the DO-Insertion *cum* DO-Deletion analysis), (Chomsky (1986: 73) and Zagana (1988: 95, 99) insert DO at AGR; Chomsky (1991: 139, 164 fn. 20) in the slot of modals; Grimshaw (1997: 382) in I or C (in SAI contexts); Haegeman & Guéron (1999: 528) in FOC (in questions); Embick & Noyer (2001: 586) in a 'v' slot preceding T; Schütze (2004) under a M head, but one above T, etc., although such alternatives have usually been proposed either tentatively or with little empirical support or argumentation. Among the analyses that introduce DO 'low', Pollock (1989: 399-400) inserts it in AGRo, Roberts (1998: 116 fn. 2, 120) somewhere between VP and NEGP, but does not specify further (at M?, at ASP?). His argument is that *don't*, *won't*, etc., being irregular, should be inflected in the lexicon, rather than in the syntax, and could be endowed not only with V-features triggering their raising to T, but also with inflectional features (e.g., NEG) causing their previous raising to Neg, which would entail their initial insertion at a lower position. Roberts' claim (p. 121) is that "The only way for the V-features [of a tensed main verb] to be checked is by moving to another V heading a VP dominating the main VP. Hence, an auxiliary must appear lower than Neg. If there is no contentful auxiliary, then *do* must appear." However, the V-features of a tensed main verb call for a T head, not for another auxiliary. Inserting *do* will not solve the problem, and, if so, under Economy, *Do-Support* should not occur. Finally, Baker (1991: 397) generates DO as a 'special purpose' VP with a smaller VP complement inside, and Ross (1969), McCawley (1975), Pullum & Wilson (1977) treat DO, like all auxiliaries, as a main V selecting a sentential complement (the 'main verb analysis'). On the whole, whereas the status initially attributed by Chomsky to HAVE and BE was soon reconsidered by Klima and Emonds in the 60's and both were reanalysed as auxiliary verbs from the 70's onward in works like McCawley (1971; 1975), Jackendoff (1972: 73-82; 1977: 47-50), Emonds (1976: 205-224), Huddleston (1976: 211-225), Pullum & Wilson (1977), Akmajian, Steele & Wasow (1979: 18, 21), Gazdar, Pullum & Sag (1982), Zagana (1988), etc., Chomsky's treatment of DO as a 'dummy' tense-carrier has remained virtually untouched from his 1955 thesis until the present.

¹⁰ Suffixes, of course, select stems with phonetic, categorial and semantic properties; cf. Selkirk (1982) or Harley (2006).

¹¹ In standard English core modals no longer co-occur, but they did in earlier English, cf. Lightfoot (1979), they still do in dialects, cf. Brown (1992), Battistella (1995), and of course modal predicates also co-occur in related IE languages (Dutch, German, Spanish, Italian...). Even when only a modal can be overtly realized, the different behaviour of each with respect to negation indicates that

M is not a unique head but a set of heads for epistemic, deontic, and possibly other modal predicates; cf. Von Stechow & Iatridou (2007), and, on the emerging UG picture, Cinque (1999).

¹² Cf. e.g. Haegeman (1995); Haegeman & Guéron (1999). Observe that *not* can be conjoined with phrasal *whether*, which in its turn can be conjoined with other wh-phrases, cf. *Whether or not he is interested, I don't know; I don't know whether or in what conditions he will be interested, etc.*

¹³ Cf. e.g. Pollock (1989); Laka (1990); Ouhalla (1990); Potsdam (1997).

¹⁴ In Pollock's (1989: 385ff) account, what is taken to prevent MVs from raising is their theta grid, which is said to become invisible to computation if the verb adjoins to the 'opaque' AGR of current English; finite auxiliaries, on the contrary, lacking a theta grid, can raise and adjoin even to a weak AGR and reach T, which explains their NICE properties. But why should weak AGR hide the theta grid? Baker cites evidence to the contrary (1991: 419-420). And, anyway, why should that matter **before** LF, the only level at which thematic relations **must** be computed and therefore visible? More radically, Chomsky (1991; 1992) and subsequent work has claimed that auxiliaries must raise overtly or cannot raise at all, since they are invisible at LF (semantically irrelevant). The latter claim is unacceptable, as auxiliaries do contribute interpretable information to LF/SEM, cf. e.g. Roberts (1998: 116), but even Pollock's weaker one is either false or just a matter of terminology: Obviously, the VP complement of an auxiliary cannot be its Agent or Experiencer, but is very likely to have roles like Event or State of Affairs. The two accounts rest on similar claims as to the semantic defectiveness of auxiliaries and the weakness of English AGR, but they are incompatible, because in Chomsky's main verbs must raise precisely at LF; if weak AGR does not make the verbs' theta grids invisible at LF, it is unclear why it does in overt syntax, and why it should matter, anyway, if it does, which casts doubt on Pollock's account from another angle. On the other hand, Chomsky's explanation faces a problem detected by Baker (1991: 414), i.e., that any verb (auxiliary or not) raising out of NEGP into T should void the NEGP barrier and leave its own trace antecedent-governed and at peace with the ECP. In other words, NEGP should **not** obstruct **any** verb raising at all. As to the different behavior of auxiliaries and verbs in this respect, Chomsky (1991) cleverly exploits the structures resulting from affix lowering (adjunction to V) and auxiliary raising to AGR (adjunction to AGR) to avoid the ECP violation when an auxiliary raises from AGR to T across NEGP by claiming that the trace of AGR is superfluous at LF and can be deleted, but this is questionable, as the deleted trace of AGR contains the trace of the auxiliary, and the integrity of the auxiliary chain is **not** superfluous at LF.

¹⁵ Chomsky (1999: 9; 2001: 5, 11, 25) mentions vP and CP as 'propositional', but vP cannot be propositional in the logician's sense. What constitutes a proposition in the logician's sense, however, is also moot, but the reasonable alternatives correspond to PolarityP or ForceP in syntax. Neither vP nor CP qualify, if CP includes subordinate clauses. See Frege (1919a,b), Strawson (1973) and Davidson (2006) for relevant discussion.

¹⁶ The value of tense is minimally a function of two time values, speech time and event time, cf. Reichenbach (1947: 289-298). Event time is an aspect of the 'content' asserted (questioned, etc., the 'dictum') and belongs under the scope of Polarity, whereas speech time belongs to the illocutionary act, cf. Frege (1879; 1919a, b), and does not. Actually, the tense-negation scope problem is even more complex; Chomsky (1995: 350-351) claims that there is an INFL preceding all VPs, main or auxiliary, that such I's contain T and AGR, and that each T may c-command a vP, which is already 'propositional', cf. also Chomsky (1999: 9). If so, there are multiple T-like heads (I's) and negation sites whenever a clause contains auxiliaries. As a matter of fact, multiple clausal negation exists in non-standard dialects, although it is not compositionally interpreted, but so-called 'clausal' and 'constituent' negation often co-occur and are interpreted at LF, cf. *Come on, you cannot not go to your son's wedding, You should not be not answering the phone in your circumstances, etc.*

¹⁷ For example, tense is in the scope of *not* in *He did smoke, but doesn't any more*, and *not* is higher than the non-finite Infl in *Not to (cf. *To not) accompany her would seem rude, She told me to accompany her, but I prefer not to (cf. *to not)*. English modals offer only inconclusive evidence in this respect, for the only overt M head allowed is polysemic/syncretic. Cinque (1999: 78-81 *et passim*) distinguishes several M heads at UG, and epistemic modals usually take scope over deontic ones in languages that allow multiple overt modal concepts in the same clause. In English, too, if M has both epistemic and deontic readings, epistemic M takes scope over negation, while deontic M does not. That is the case of *may*, cf. Von Stechow & Iatridou (2007: 469). Interestingly, *might*, which has only epistemic readings, always takes scope over negation. Yet, most English modals allow both readings, always preceding *not* at PF, and etymologically related verbs like English *must* and German *müssen* behave differently with respect to negation, cf. Roberts (1998: 115), Von Stechow & Iatridou (2007: 450-451).

¹⁸ E.g. in Baker (1985; 1988), Ouhalla (1990), Belletti (1990), Chomsky (1991), Radford (1997), Haegeman & Guéron (1999), Lasnik, Uriagereka & Boeckx (2005). Of course, Chomsky (1995) claimed that AGR_S should be dropped, and subsequent work typically offers only T (and C) to host tensed auxiliaries, cf. Radford (1997; 2004). Yet, AGR_S or an equivalent functional head (e.g., Predication, in Bowers 1993; 2001) is hard to dispense with, although it almost certainly belongs much lower in the syntactic hierarchy, in the lowest IP immediately above the main VP/Predicate. In English, this is clearest when predicative BE is followed by nominal predicates, as in *Ben should have been a teacher/*teachers* or *Helen should have been a nun/*monk*, whose subject must locally agree with its predicate in number (and gender) before raising to Spec T and above. This is one of the reasons that has determined our choice of Force(P), rather than AGR(P), as the landing site of the subject and the finite auxiliary, cf. *infra*.

¹⁹ Cf. Zanuttini (1997; 2001), Benincà & Poletto (2004), Jäger (2006).

²⁰ Cf. **I must do try, *I have done try, *I am doing try, *I was done try, etc.*

²¹ Cf. Ross (1969), Pullum & Wilson (1977), Akmajian, Steele & Wasow (1979), Gazdar, Pullum & Sag 1982, or Schachter (1983) for various classical lexical/structural approaches to the problem of auxiliary order.

²² It apparently had them in earlier English, though, particularly in Late ME; Denison (1993: 259) cites *And also my lorde abbot of westminster ded do shewe to me late certain euydences wryton in olde englysshe* [Prol. *Eneydos* 108.14], and similar non-causative examples are attested since ca. 1300, cf. Denison (1993: 269-270).

²³ The diachronic evidence that auxiliary DO has developed out of earlier uses of the homophonous MV is overwhelming. The complex diachronic relations among such uses have generated a vast literature and will not be reviewed here, but Denison (1993: 255-274) is a useful summary of the debate and of key earlier descriptive works. Roughly, the facts are that in OE there were one or more homophonous main verbs *don* attested with senses like 'put', 'make', 'cause', and 'do', and the latter was used as a pro-VP similar to *do(so/it)*, and occasionally as a pro-V. Apparently, all such verbs/uses of *don* except the last one remained in ME, and particularly causative *don* became frequent with both passive participial and infinitival complements. Most would-be early examples of auxiliary DO followed by an infinitive (from ca. 1300 onwards) could actually still be instances of causative *don*, but that sense of DO was about to disappear in such contexts. A clearly periphrastic non-causative auxiliary DO is first attested in questions ca. 1380, begins to be used in negatives in the early 15th c., and appears, perhaps as an expression of emphasis in some cases, in pleonastic use in others, before the MV at the end of the century. At that stage, both MV DO and 'periphrastic' DO could still select infinitival VPs. As a consequence, the pattern [auxiliary DO + infinitival (active) MV *do* + infinitival VP] was still possible. Present-day English MV DO, on the contrary, takes NP complements, not infinitival VPs, when dyadic, whereas auxiliary DO takes only infinitival VPs, has lost all the causative and active features of the older verb(s), and occurs only in the NICE contexts (apart from 'spurious' DO). However, pseudo-cleft constructions like *What he did was look for a job*, where *what* is both the object of MV DO and anticipates the infinitival VP after *was*, still recall the old complementation pattern. Note that DO is the

MV in such cases, since it lacks the NICE properties, cf. **What he didn't was look for a job*, and can follow auxiliary DO, cf. *What he did/didn't do was look for a job*. Scholars who believe in auxiliary DO as a descendant of the OE MV DON usually postulate a long process of semantic weakening and loss of causative and active features in the auxiliary which has also yielded (British) *do*, whereas the transitive DO of the pro-VPs *do so/it/that* preserves the active character that its ancestor had in OE. The 'dummy' DO theory, of course, does not acknowledge the connection between the dummy and the MV in its pro-VP uses, but there are exceptions, cf. Pollock (1989), Stroik (2001), Embick & Noyer (2001: 586) and Haddican (2007: 545-546). According to Pollock (1989: 399-400), in particular, auxiliary DO copies the theta-grid of its VP complement and is parallel to other uses of DO as a substitute, and Grimshaw (1997: 386-388) claims that auxiliary DO is simply MV DO when its lexical-conceptual structure remains unparsed.

²⁴ Significantly, Huddleston & Pullum (2002: 75, 85) or Denison (1993: 281) do not consider DO, HAVE, or BE defective at all.

²⁵ In view of the richness of the lexical information that has to be computed, Chomsky's (1995) set-building Merge and the 'no tampering' principle of Chomsky (2005) are clearly inadequate. On the contrary, the structure-building operation(s) must be 'invasive', since lexical and syntactic objects must be significantly modified during the computation, e.g., unvalued attributes must be valued, valued ones must be licensed by matching targets and made visible as such at later derivational stages, redundant information must be destroyed by unification, e.g., in cases of head movement, features must be copied onto objects, etc.; cf. Escribano (2005; 2007; 2008). This paper, in sum, like LFG, HPSG or Categorical Grammar, presupposes 'invasive' operations like Satisfaction and Unification, but finds no use for bare set-building Merge; simply: the CC does **not** build sets, but functionally integrated wholes, and 'no tampering' is the wrong kind of Economy in what the CC of human language is concerned.

²⁶ At least as rich as the Lexicon of Chomsky's classical writings from the 60's to the late 1990's, i.e., Chomsky (1965; 1985; 1993; 1995; 1998; several papers in 2000; 2002). Since then, minimalists seem to have reduced the linguistic Lexicon to rather vaguely specified formal features, leaving 'meaning' in the Language-external C-I systems, cf. Fitch et al. (2002), Hauser et al. (2005), and Borer (2005), but that represents a drastic weakening of the internalist approach that is strongly rejected here, as in Escribano (2005; 2008). In this paper, as in Bouchard (1995), 'meaning' is still 'linguistic' (i.e., internal to I-Language), not 'conceptual', and the linguistic Lexicon contains items with rich SEM information and delicate selection properties.

²⁷ Cf. Haegeman & Guéron (1999, ch. 5), for a textbook account of the syntax-semantics mapping in a broadly Davidsonian vein.

²⁸ If the sentence is true, the event/state referred to becomes an 'eternal' fact; past events/states 'exist' if they are eternal facts. As should be obvious, an 'eternalist' metaphysics is adopted here, but the 'presentist' alternative leads to semantic incoherence; cf. Loux (2002: 220-226). Since well-formed sentences may be false, clearly sentences do not describe events/states/facts, but just **possible** events/states/facts, where 'possible' means 'compatible with the ontology and the rules of the language'. Events/states 'as they occur/hold in the real' world are ineffable and simply irrelevant to internalist semantics.

²⁹ The PRED subscript is needed, as PHON(BE) also represents several homonyms, cf. Escribano (2009).

³⁰ In Parsons (1990) states 'hold', but 'hold' seems to mean more than 'be the case', since it can be preceded by DO_{AUX}.

³¹ DO_{AUX}, however, selects events in the broadest sense, as it can occur with verbs like *see, like, cost, weigh, entail*, etc., usually considered stative by standard grammatical tests (lack of 'progressive' uses, etc.). Correspondingly, BE_{PRED} must select states in a **narrow** sense. However, from a conceptual point of view, *see, like*, etc. still plausibly describe occurrences in the mind of an experiencer, and *cost, weigh, entail*, etc. might name occurrences in a metaphorical sense (i.e., they might be prosopopeic), or perhaps Language and the conceptual system have fallen slightly out of step at this point.

³² In general, states are logically simpler than events, which, by definition, consist of changes of state, and BE_{PRED} is simpler than e.g., BECOME, which entails it, but, furthermore, BE_{PRED} is traditionally considered the **simplest possible** verb. Significantly, logicians from Aristotle to the Port Royal Logic assumed it to be a necessary component of **all** predications. That was an 'abstract' analysis from a linguist's point of view, but also a straightforward way to capture the existential dimension of all possible 'states of affairs' (both events and states): Ultimately, a possible SoA 'is' or 'is not' (the case).

³³ As in Chomsky (1999), which revised his earlier view, e.g., in Chomsky (1995), that verbs enter derivations fully inflected.

³⁴ BE_{PRED} also has a phonologically null variant, but it is marginally licensed only in block language, cf. *Tory MP in trouble*, whereas null DO_{AUX} is the default choice. This is explicable, though: DO_{AUX} can be dropped at PF because it is just a proxy for a VP that still has a proper PF representation elsewhere; on the contrary, BE_{PRED} is not a proxy, but a **copy**, since it raises into AUX from its VP. Thus, if DO_{AUX} is null at PF, no information is lost, but if BE_{PRED} is, the MV chain is not represented in PF at all, and, in the circumstances of interest here, nothing remains to act as an overt carrier for the inflectional features of T. Hence, if there is no auxiliary above, BE_{PRED} **must** raise into AUX, Tense, Polarity and Force, and surface at PF in finite form. That explains why BE_{PRED} is the only MV that acts as an auxiliary if necessary, cf. Escribano (2009).

³⁵ Culicover (2007: 32) also considers DO_{AUX} as the default AUX, but does not make that status follow from deep properties of DO.

³⁶ Cf. Reichenbach (1947:289-298) and the multiple-IP view of clauses with auxiliaries in Chomsky (1995: 350-351).

³⁷ Although *not* need not deny the existence of the event *tout court*. It may also focus on the identity of a participant or circumstance thereof. In such cases the occurrence of an event of the type described is presupposed, as well as the participation of a certain type of entity with a specified role in it, but the identity of the participant/circumstance is rejected. Thus, *John did not invite MARY* (but somebody else) may be represented in Parsons' terms by the LF (∃e) [Inviting(e) & Time(e, t<now) & Agent(e, John) & ¬Theme(e, Mary)]. Correspondingly, whereas 'polar' questions focus on the occurrence/existence of events/states, wh-questions presuppose it, but demand information on their participants/circumstances.

³⁸ Not a 'proposition', though, if by such is understood an expression of type 't' (i.e., with a truth value). A 'propositional content' (POLP) is, rather, an n-place propositional function; it yields a true/false proposition when a) its constituents (NPs, tense, etc.) are referentially interpreted, and b) it is asserted, i.e., it has [F: A] in Force.

³⁹ Modifiers are predicates, of different logical types, and need at least one argument, cf. Escribano (2004); *not* is a predicate of an existentially quantified event/state, as Parsons' LF 2b) above indicates.

⁴⁰ Cf. *Who uses Google?* vs. **Who does use Google?* but *Who does use Google?* *Who does not use Google?* vs. **Who not uses Google?* Observe that in *Who uses Google?* Polarity is positive [Pol: +], since the existence of a 'using' event (with an unknown agent) is presupposed.

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Address for correspondence:

Dr. José Luis González Escribano
Catedrático de Lingüística Inglesa
Universidad de Oviedo

Campus de Humanidades (El Milán)
C. Teniente Alfonso Martínez
33011 – Oviedo
España

E-mail: escr@uniovi.es; scribby@telecable.es
<http://www.telecable.es/personales/escr>