Accounting for do-support Post-Syntactically: Evidence from Old Irish

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Abstract

Since Chomsky (1957) much has been written on the topic of do-support and its connection to affix hopping in English. However, as yet no definitive analysis has been proposed. This paper considers a parallel to English do-support, namely the use of the dummy particle no in Old Irish (OIr). A post-syntactic account of this phenomenon in OIr is developed within the framework of Distributed Morphology/DM (Halle and Marantz, 1993) and the possibility of applying such an account to English do-support is considered.

Accounting for *do*-support Post-Syntactically: Evidence from Old Irish

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1 Introduction

Since Chomsky (1957) much has been written on the topic of do-support and its connection to affix hopping in English. However, as yet no definitive analysis has been proposed. This paper considers a parallel to English *do*-support, namely the use of the dummy particle *no* in Old Irish (OIr). A post-syntactic account of this phenomenon in OIr is developed within the framework of Distributed Morphology/DM (Halle and Marantz, 1993) and the possibility of applying such an account to English *do*-support is considered.

The structure of this paper is as follows: section 2 introduces the OIr data and the distribution of the particle *no*. Section 3 examines the problems faced by syntactic accounts of *no*-insertion. Section 4 develops a post-syntactic account. Section 5 concludes the paper.

2 An Introduction to the Old Irish Verbal System

2.1 The Old Irish Double System of Verbal Inflection

The OIr verbal system differs from that of other Indo-European languages in two main respects. Like its modern counterpart, OIr has unmarked verb-initial word order:

(1) Béoigidir   in spirut   in corp   in fect   so.
     vivifies.PRES.3.SG[1] the spirit   the body   the time   this
     'The spirit vivifies the body now.'   (Wb 13^{d}7)

Unlike Modern Irish, however, OIr also has a double system of verbal inflection, whereby the verb has a different ending depending on its position in the clause. When the verb is in absolute initial position, as in (2a), it has absolute inflection. When the verb is in non-initial position, i.e., when it is preceded by a conjunct particle such as the negative particle or a conjunction, it has conjunct inflection, as shown in (2b).

(2) a. Léicid-som   cloich   asa   tailm…
       release.PRES.3.SG.ABS-3.SG.M stone   out-of-his   sling
       'He releases a stone out of his sling…'   (LU 6210–6211)
    b. Cenid   leci   in   metur…
       although.NEG   allow.PRES.3.SG.CJ   the   metre…
       'Although the metre does not allow…'   (Ml 30^{a}10)

The verbs given in example (2) are identical in terms of person, number, tense, aspect and mood. The different forms *léicid* and *leci* result purely from their different positions in the clause.

In addition to simple verbs, OIr also has a large number of compound verbs consisting of a simple verb plus one or more preverbs. Preverbs are etymologically related to prepositions and change the meaning of the verb in generally unpredictable ways. For example, the compound verb *fo-reith* 'helps' consists of the simple verb *reithid* 'runs' and the preverb *fo* 'under.' Unlike simple verbs, compound verbs show no variation in terms of their endings; they always have conjunct inflection. However, in different clausal positions compound verbs have different stems. When a compound verb appears in absolute initial position in the clause, it is deuterotonic, so called because the stress falls on the second syllable:

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[*]Many thanks to Ian Roberts and Theresa Biberauer for comments on this work at various stages.

[1]The (non-standard) abbreviations used in the glosses are as follows: Abs, absolute; Conj, conjunct; Cop, copula; Dt, deuterotonic; Inf, infixed pronoun; Pvb, preverb; Pt, prototonic; Suff, suffixed pronoun. Textual abbreviations correspond to those found in the Royal Irish Academy's *Dictionary of the Irish Language*.

(3) Do-<u>beir</u>   in   fer   in   claideb don   macc.
    gives.DT   the   man   the   sword   to.the   boy
    'The man gives the sword to the boy.'

When a compound verb is in non-initial position, it is prototonic, i.e., the stress falls on the initial syllable, the regular OIr stress pattern:

(4) Ní   <u>ta</u>bair   in   fer   in claideb don macc.
    NEG   gives.PT   the man the sword   to.the boy
    'The man does not give the sword to the boy.'

2.2 The Particle *no* in Old Irish

The OIr particle *no* has no independent meaning and no independent grammatical function (Thurneysen, 1946:348).[2] It appears in three distinct environments, namely with enclitic object pronouns, in relative clauses, and with the so-called secondary tenses. Let us examine each of these environments more closely.

As in many other Indo-European languages, object pronouns in OIr are enclitic and always appear in second position. If, as we saw above, the verb appears in initial position, we would expect the pronoun to appear suffixed to it. However, such an occurrence is in fact rare in the OIr period. When there is a conjunct particle, the object pronoun is infixed between the conjunct particle and the verb, as in (5). If there is no conjunct particle and the verb is compound, the object pronoun is infixed between the initial preverb and the remainder of the verb, as shown in (6).

(5) Ní-m   charat-sa.
    NEG-INF.1.SG   loves.PRES.3.PL.CONJ-EMPH.PART.1.SG
    'They do not love me.'   (Wb 5ᶜ6)
(6) Du-s   n-gní.
    PVB-INF.3.SG.F makes.3.SG.PRES.DT
    'He makes it (f).'   (Ml 29ᵃ3)

The only time that the object pronoun can appear suffixed to the verb is when the verb is simple and in absolute initial position:

(7) Berth-i   leis   co   cenn.
    bear.3.SG.FUT-SUFF.3.SG.M   with.3.SG.M   to   end
    'He will bear it with him to the end.'   (Wb 23ᵃ19)

Yet, even when the verb is simple and initial, suffixed pronouns occur very rarely. Suffixed pronouns occur in restricted environments in the OIr period. The most numerous class consists of third person pronouns attached to third singular verb forms, although you also sometimes find third person pronouns attached to third plural or first plural verbs (Thurneysen, 1946:270–271).[3] In all other persons, the dummy particle *no* is inserted and the pronoun appears infixed between *no* and the verb, which follows in conjunct form:

(8) No-m   ísligur.
    PVB-INF.1.SG   abase.PRES.1.SG.CONJ
    'I abase myself.'   (Wb 17ᵈ22)

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[2]Although synchronically *no* is meaningless, this is unlikely to be the case diachronically. Little has been done on the historical development of *no*. See Newton (2008) for some initial remarks on the topic.

[3]Non-third person pronouns are found with the verb *táith* 'be' to indicate possession. We also find pronouns attached to non-third person verbs in poetic texts (Thurneysen, 1946:271). This suggests that suffixed pronouns were more productive at an earlier stage of the language.

The distribution of *no* in relative clauses resembles its use with object pronouns. In OIr there are many different ways to mark a relative clause (see Thurneysen, 1946:312–325). One way that a clause can be marked as relative is to use a special relative form of the verb. This can be seen in example (9) below, where the non-relative form would be *gaibid* 'takes, seizes.'

(9) Is   oinfer   gaibes   búaid   diib   inna   chomalnad.
    COP   one.man take.PRES.3.SG.REL   victory of.3.PL in.its   completing
    'It is one man of them that gets victory for completing it.'   (Wb 11ᵃ4)

Relative clause marking is associated with the C position so the fact that special relative morphology is only found on simple verbs in absolute clause-initial position supports the idea that simple verbs move to C in OIr.

Like suffixed pronouns, special relative verb forms in OIr are restricted in distribution to verbs in the third person and, in the earliest texts, first plural (Thurneysen, 1946:313). In all other persons when there is no special relative form, the dummy particle *no* is inserted, which either lenites (10) or nasalizes (11) the initial segment of the verb and causes it to have conjunct inflection.

(10) Is   hed in so   no   chairigur (non-rel *cairigur*).
     COP   it this   PVB reprimand.PRES.1.SG.CONJ
     'This is what I reprimand.'   (Wb 11ᵈ1)
(11) Cid   no   mbetha (non-rel *betha*)?
     why   PVB be.PAST.SUBJ.2.SG.CONJ
     'Why (is it that) you should be?'   (Wb 4ᶜ24)

The third and final environment in which *no* appears is that of secondary tenses. Secondary tenses in OIr differ from primary tenses in that they only have one set of endings—they have no absolute forms. As a result, simple verbs in the imperfect (12), past subjunctive (13), or conditional (14) can never appear in absolute initial position. Instead, when there is no meaningful conjunct particle or preverb preceding the verb, the dummy preverb *no* is inserted:[4]

(12) No   scarinn   friu.
     PVB   PART.IMPF.1.SG.CONJ to.3.PL
     'I should part with them.'   (Wb 24a4)
(13) Cia   nu tiastais   huaim
     although   PVB go.PAST.SUBJ.3.PL.CONJ from.1.sg
     'Although they should go from me'   (Ml 117d3)
(14) No   comallaibthe.
     PVB   fulfill.COND.PASS.SG.CONJ
     'It would be fulfilled.'   (Ml 105b14)

Having described the three syntactic environments in which we find *no*, let us now consider how we might account for its distribution syntactically.

3 Syntactic Assumptions

3.1 A Syntactic Account of the Old Irish Verbal System: Carnie, Harley and Pyatt (2000)

The main existing syntactic account of the OIr double system of inflection is that of Carnie, Harley and Pyatt (2000—hence CHP). CHP build on the basic insight that the different verbal forms in OIr are linked to different positions in the clause, by arguing that the verb is spelled out differently depending on its syntactic position. CHP assume that absolute inflection is associated with the C position. Therefore, only when the verb is in C will it have absolute inflection. In any other syntactic position it will have conjunct form.

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[4]Secondary tense forms without *no* are only found in poetry (Thurneysen, 1946:348).

CHP propose that OIr has a filled C requirement, in other words, C must receive a phonological realization. Following Chung and McCloskey (1987), it is assumed that conjunct particles are complementizers. This being the case, we expect them to be merged in the C position. Therefore, whenever there is a conjunct particle, C is necessarily filled, and the filled C requirement is satisfied. As a result, the verb appears in T and has conjunct inflection. When there is no conjunct particle merged in C, however, some other element must move to fill C. When the verb is compound and there is no conjunct particle, the initial preverb of the compound verb moves to fill the C position. In this case, the remainder of the verb stays in T, and so has conjunct inflection. When the verb is simple, however, and there is no conjunct particle in C, the whole verb moves from T to C, and so is spelled out with absolute inflection. This is shown schematically in the trees below:

(15) a. absolute   b. conjunct   c. deuterotonic   d. prototonic

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      CP              CP                 CP                    CP
     /  \            /  \               /  \                  /  \
    C    TP         C    TP            C    TP               C    TP
  berid /  \        ní  /  \           do  /  \              ní  /  \
       T    VP          T    VP            T    VP               T    VP
       |                beir              beir                  tabair
      t_v
```
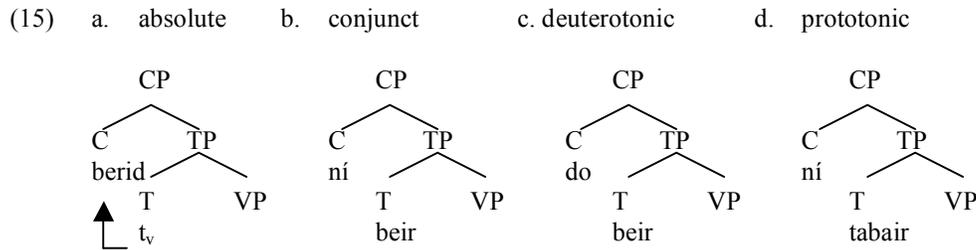
The idea that different verbal forms can be linked to different syntactic positions is theoretically appealing, especially from a DM perspective, as it entails that the different forms represent the phonological realizations of different morphosyntactic features. However, CHP's account faces certain empirical and theoretical problems, suggesting that it cannot be upheld. The empirical data are discussed below. For further details on the theoretical issues regarding the derivation of compound verbs, the reader is referred to Newton (2006:36–49) and Adger (2006:620–627).

3.2 Empirical Problems for the Syntactic Account: Accounting for *no*-insertion

CHP use evidence from object pronouns and relative clauses to support their view that initial verbs move to C in OIr. Following Kayne (1991), CHP assume that the object clitics in OIr have a set position in the phrase. As noted above, when there is a conjunct particle, the object pronoun appears between the conjunct particle and the verb. Making the fairly standard assumption that Irish conjunct particles are C elements (cf. Chung and McCloskey, 1987), this suggests that object pronouns mark the right edge of the CP. On this basis, the fact that simple verbs appear with a suffixed clitic pronoun provides evidence that simple verbs raise to the C position. However, this evidence is not as strong as CHP suppose. As noted in section 2.2, suffixed pronouns are very restricted in OIr, and so do not provide good evidence for V-to-C movement. Moreover, it is not clear how CHP would account for the seemingly more productive process of *no*-insertion. Before we consider this in more detail, let us turn to the second piece of evidence provided by CHP.

CHP propose that special relative verbal forms also provide evidence for V-to-C movement in OIr. Due to parallels between relatives and wh-movement, relative marking tends to be associated with the C position. The fact that only simple verbs in absolute initial position can have special relative endings supports CHP's proposal that these simple verbs move to C. Again, as we saw above, this evidence is not as strong as CHP suggest. Like object pronouns, special relative verbs are also very restricted in their use, with the *no*-insertion strategy seeming to be more productive.

So, it seems that CHP can account for the more archaic, irregular patterns, i.e., suffixed pronouns and special relative forms, but they do not provide an explanation for the more productive pattern of *no*-insertion.[5] Moreover, it is not entirely clear whether *no*-insertion could be

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[5] CHP (2000:fn 25) state that their account deals with the period of the language when pronouns were still suffixed to the verb. If this is the case, then it is not OIr that their theory accounts for, but an undetermined pre-OIr period. See Newton (2006:139–140) for a similar suggestion regarding the applicability of CHP's account to an earlier stage of OIr.

accounted for under their theory. If we assume that OIr has a filled C requirement we have two options for incorporating the *no* particle. First, we could assume that *no* is the realization of some features merged in the C position that block verb movement to C. Secondly, we could argue that *no* is the last resort realization of C when nothing else has been merged in C and neither a verb nor a preverb has moved there from lower in the structure. Let us consider each of these in turn.

If *no* is a syntactic element, i.e., a bundle of morphosyntactic features merged into the C position during the syntax, then the first question is what are these morphosyntactic features? If *no* is merged in the syntax, we would expect it to have some kind of meaning or at the very least a clear syntactic function. We saw above that traditional grammarians describe *no* as meaningless. If we turn to the environments in which it is used, it is equally difficult to pin down any exact function. As shown in examples (5–14) above, *no* is found in three distinct environments, namely with object clitic pronouns, relative verb forms and secondary tenses. There is no obvious morphosyntactic feature that these environments could share. Of course it could be argued that there are three different *no* particles, i.e., one that encodes object clitic agreement, one that encodes relativization and, in the case of the secondary tenses, one that encodes some kind of aspectual feature. Under this view there would be three different, unrelated morphosyntactic feature bundles which all happen to receive the same phonological realization, namely *no*. However, although there is no clear feature-based link between the three environments in which *no* is found, there is a striking parallel between these environments. We find *no* in the C position only when nothing else can fill C. If there are three different *no* particles encoding three different types of features, this parallel is lost. Moreover, the morphosyntactic feature account of *no* faces significant problems in this regard. If *no* is an object clitic agreement particle, a relative clause marker, and an aspect marker, surely we would expect it to be merged in C whenever the appropriate features are present in the derivation. So, we might expect *no* to be merged whenever there is an object pronoun, or whenever the verb is relative, or whenever the verb is in a secondary tense. However, this is clearly not the case. First, we never find *no* when there is another complementizer present. Secondly, and more problematically, we never find *no* when the verb is compound. As we saw in example (6) above, when the verb is compound, object pronouns appear between the initial preverb and the verb. Similarly in relative contexts and secondary tenses we never find *no* with compound tenses. When there is no conjunct particle the verb is always in deuterotonic form:

(16) A   n-ad-chiam (cf. non-relative *ad-ciam*)
    that   PVB.see.1.PL.PRES.DT
    'That which we see'   (Ml 112[b]13)

(17) Do-bertis   cach   nolc…
    PVB-give.3.PL.IMPF.DT   every   evil
    'They used to inflict every evil…'   (Ml 54[c]30)

If *no* encodes object agreement, relative marking, or aspect features, we would expect it to be inserted whenever these features are present in the derivation, both with simple and with compound verbs. This is not the case. Thirdly, and most problematically, the environments in which we find *no* are even further restricted. The *no* particle cannot appear when a third person object pronoun is used with a third person verb, or where a relative verb is third person or first person plural. To uphold this account of *no* we would have to explain why merge of *no* is blocked in these cases.

Let us turn now to the second option, namely that instead of being a bundle of features merged in the syntax, *no* is in fact a last resort element inserted at PF to fill C when no other element has been merged in or moved to C during the syntax. This option has the obvious advantage over the narrow syntax account in that it reflects the intuitions of the traditional grammarians that *no* is a dummy particle whose main function is to fill the first position when nothing else more meaningful is present. The main problem with this, however, is that we need to explain why movement to C is blocked in the situations where *no* appears. Why should the presence of an object pronoun, or relative marking, or the fact that the verb is in a secondary tense prevent the verb from moving to C? Furthermore, why is it that it is only movement of the verb that is blocked? As noted above, we never find *no* with compound verbs, so it seems that the

movement of the initial preverb of compound verbs is not blocked in the environments that movement of the verb is. Moreover, as we have already seen, the use of *no* with object pronouns and relative marking is restricted to particular persons and numbers. Movement of the verb to C is blocked only when the verb and the object pronoun are not third person and, in the case of relatives, only when the verb is not third person or first person plural. The necessary restrictions on V-to-C movement are difficult to formalize.

In this section it has been argued that the empirical evidence supporting CHP's filled C condition is not as strong as it appears at first sight. Moreover, it seems that the process of *no*-insertion, which seems to be highly productive within the OIr period, simply cannot be accounted for satisfactorily within an account of the OIr verbal system that assumes a filled C condition and associated V-to-C movement. If we assume, on the other hand, that the verb never moves to C in OIr, but only moves as far as T, we can account for the productive case, i.e., *no*-insertion, but not for the archaic, irregular cases, i.e., suffixed pronouns and special relative verb forms.[6] If this is the case then the distinction between absolute and conjunct and between deuterotonic and prototonic cannot be a result of different syntactic configurations, and instead must be determined post-syntactically. We will leave this issue aside here (see Newton, 2006 and Adger, 2006 for two alternative post-syntactic accounts of the OIr verbal system) and in the remainder of this paper, we will consider just the *no*-insertion construction, and how this can be accounted for under a syntactic account without a filled C requirement, where the verb only moves as far as T.

4 A Distributed Morphology Account of *no*-insertion in Old Irish

4.1 Vocabulary Insertion in Distributed Morphology

In this section we will develop an account of *no*-insertion based within the theory of DM. Before we consider the OIr data, let us first outline some theoretical assumptions.

One of the fundamental assumptions of DM is that there are no phonological features in the syntax. Phonological features enter the derivation after syntax is complete, at the syntax-phonology interface via the operation Vocabulary Insertion. During Vocabulary Insertion, bundles of morphosyntactic features are replaced by phonological realizations, called Vocabulary Items (VIs). For each morphosyntactic feature bundle all possible VIs that could be inserted into that particular position compete for insertion. To be inserted in a particular context, the morphosyntactic features associated with a VI must be non-distinct from those of the insertion context, i.e., the VI cannot have any features that are not present in the terminal node. However, the VI need not contain all the features of the terminal node. The VI that wins the competition and is inserted into the derivation will be the one with the most matching features. Let us consider how this would work in OIr.

In DM terms, each conjunct particle in OIr is an independent VI matching morphosyntactic with phonological features. Some consist simply of C-based features and others are independent lexical items, such as *when* and *until*.[7] This is shown in (18) below.

(18) [neg]   →   /ní/
     [Q]   →   /in/
     [neg] [rel]   →   /nad/
     when   →   /dia^n/
     until   →   /co^n/

When the C position contains the features [neg] and [rel], either /nad/ or /ní/ could be inserted as both are non-distinct from the terminal node, and neither VI contains features that are not

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[6]The irregular suffixed pronouns and relative forms can be accounted for if we assume that they are learned by rote as irregularities and inserted into the appropriate syntactic context, rather than being derived through regular syntactic processes.

[7]The idea that lexical items such as conjunctions compete for insertion into the C position is problematic in DM. However, it is clear that such competitions take place. It is perhaps possible that these conjunctions can be broken down into morphosyntactic feature bundles. However, this will not be attempted here.

present in the C position. However, in this case /nad/ will be inserted in preference to /ní/ as it is more specific; it matches two features in C rather than one. When the C position contains only the feature [neg], it will be impossible to insert the VI /nad/ as this contains the feature [rel], which is not present in C, and so /ní/ is the only option.

4.2 Old Irish *no* as a Last Resort Element

Under the DM view, then, phonological realizations, VIs, replace morphosyntactic feature bundles at PF at the point of Vocabulary Insertion. In the case of OIr *no*, however, as we saw in section 3.2 above, it is by no means clear what the morphosyntactic features realized by *no* might be. Moreover, if *no* spells out particular features, we might expect it to surface whenever these features are present, and so we will face the same problems as observed above, namely that *no* does not appear with compound verbs. Newton (2006:74–84) argues that the initial preverbs of compound verbs are also phonological realizations of the C head, specifically of a v feature in C. If *no* spelled out specific morphosyntactic features, such as relativization, object clitic agreement, or aspect,[8] we might expect these features to be realized in preference to the v feature corresponding to the preverb.[9]

   An alternative is to characterize the particle *no* as an elsewhere morpheme. Instead of realizing particular morphosyntactic features, *no* is simply specified as a VI that can be inserted under the C node. In DM terms, then, *no* will always compete for insertion into the C position, but will only be inserted when there are no more highly specified VIs (i.e., conjunct particles or initial preverbs) that match the feature content of C more closely. When C contains a negative feature, or a conjunction feature, or a preverb feature (see (19) below), the corresponding VI will be inserted. However, if none of these features are present, the elsewhere morpheme *no* will be inserted.

(19) [C [+negative]]   →   ní
      [C [+conjunction]]   →   con, dia^n, ara^n
      [C [+preverb]]   →   do, fo, as, ro
      [C]   →   no

The characterization of *no* as an elsewhere morpheme accounts well for the intuition that it appears simply whenever it is needed; however, the VI for *no* listed above is perhaps slightly misleading. C is not, as (19) suggests, realized as *no* in all clauses where there is no conjunct particle and no initial preverb. As we saw in section 2, when there is no object pronoun, the clause in not relative, and the verb is in a primary tense (e.g., present indicative, present subjunctive, future, preterite), we do not find *no*; instead the verb is in initial position with absolute endings. Let us consider how we might account for this alternation between *no* and ø.

   The basic proposal is as follows: We find a conjunct particle or preverb when there are extra features in C in addition to C's default features (the features that are *always* present on C),[10] and these features have a specific phonological realization. We find *no* when there are extra features in C that do not have their own specific phonological realization (relative, object clitic agreement, aspect). When C contains no extra features, only its default features, i.e., when the verb is simple and the clause is declarative, C receives no phonological realization and absolute inflection appears on the verb.

   In order for C to receive a null realization, it could, perhaps, be argued that in addition to the elsewhere morpheme *no* there is also a null morpheme, ø. This would be inserted when C contains only its default features:

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[8]Relative marking is standardly associated with the C position. Object clitic agreement and aspect are typically associated with v. Newton (2006:74–84) argues that C in OIr contains an unvalued *v* feature. When the *v* feature in C is valued by Agree, C receives object agreement and aspectual features.

[9]Of course, we could stipulate that v features are realized in preference to any *no*-relevant features, by making reference to some kind of feature-hierarchy (cf. Noyer, 1997).

[10]The details regarding what exactly the default features of C are remains to be worked out. This is an issue for further research.

(20) [C [Force$_0$ Finiteness$_0$]] →   ø

However, if we are to maintain the proposal above that the *no* is an elsewhere morpheme, with no specified morphosyntactic features, then this is instantly problematic, as the VI in (20) is more specific than that given for *no* in (19), and so will be inserted in preference to it in environments where we expect *no*. For example, when the C node is specified with an object clitic feature, it will have the feature structure given below (assuming it is non-relative and the verb is simple):

(21) [C [Force$_0$ Finiteness$_0$ ObjectCl]]

This feature structure is more closely matched to the VI in (20) than that for *no* in (19) and so we would expect ø to be inserted rather than *no*. This should not be the case.

An alternative suggestion is that when C in OIr contains only its default features, the entire C head is deleted at PF, before Vocabulary Insertion. If C does not reach the point of Vocabulary Insertion, then it will necessarily receive a null realization. We no longer need to postulate a null VI and can maintain the idea that *no* is the elsewhere morpheme, inserted whenever C reaches Vocabulary Insertion, but contains no morphosyntactic features that have a phonological realization of their own. The claim that C is deleted at PF is a radical one. If it is to be maintained we must identify strict conditions under which this deletion can take place. In the remainder of this section we will examine one possibility for determining these conditions.[11]

PF-deletion is not in itself problematic. If we adopt a copy theory of movement (Chomsky, 1995, et seq.), there must be a mechanism in place to delete lower copies, e.g. Chain Reduction/CR (Nunes, 1999, 2004). The deletion of C in OIr could be seen as part of CR if we extend CR to apply not just to movement copies, but also to features in an Agree relation. This is not unreasonable. Chomsky (2001:11) suggests that chains or indices cannot be used to mark multiple instances of a moved element as this would violate the Inclusiveness Condition. As a result, the only way to determine that two elements are copies is through identity and c-command. It is clearly not just moved copies that will meet these conditions. Any pair of features that have been valued by Agree will necessarily be identical and in a c-command relation.

Newton (2006:64–68) argues that absolute morphology in OIr is the phonological realization of a Force feature on the verb in T. This Force feature is shared by C and T via feature spreading (Chomsky, 2008), and so can potentially be phonologically realized in either position. Under CR we would expect the Force feature to be realized in the highest position, i.e., C. However, this is clearly not always the case. Following Landau (2006:54), it is assumed that the choice regarding which copy is realized by CR is determined by PF requirements. Specifically, if a copy violates a PF requirement, it must be deleted. It is proposed that the PF requirement at play here is the Stray Affix Filter (SAF, Lasnik, 1981). It is argued that the OIr Force feature is affixal and so needs a host. The affixation here applies at PF, and so it seems reasonable to suggest that it should be sensitive to morphosyntactic features. To be realized in C, affixal Force needs to combine with non-default, i.e., extra features, in C.[12] When no such features are present, C violates the SAF.[13] When a violation of the SAF, a PF-requirement, occurs, CR cannot realize the offending copy. CR, therefore, has two options: delete the offending feature or delete the entire head. I propose that it is the latter that occurs in OIr.

Let us consider now how the account presented above deals with the OIr data. When a conjunct particle or preverb is present in C, this provides extra features for affixal Force to combine with. Force is realized in C and deleted in T. C is spelled out as a complementizer or preverb and the verb has conjunct form. When there are relative, object clitic agreement, or aspect features in C, again affixal Force has features with which to combine. C does not, therefore,

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[11]For reasons of space only a brief outline of the proposal is presented here. For a fuller exposition see Newton (2006).

[12]The simplest way for an affixal feature to combine with other features is simply by appearing under the same terminal node at PF. Other ways of combining are not ruled out, but will not be discussed here.

[13]The basic rationale behind this is that default features are assumed to have the value 0 and as such are in some sense morphologically deficient, and so unable to provide a host for affixal features.

violate any PF requirements and so can be realized by CR. As there is no specific realization for these features, the elsewhere morpheme *no* is inserted, and again the verb is in conjunct form. In finite, declarative clauses, where C contains only its default features, there is no host for affixal Force. C violates the SAF, a PF requirement, and so is deleted and receives no phonological realization. The Force feature is realized in combination with the verb in T and so the verb appears with absolute inflection.

4.3 English *do*: a Parallel Case?

Let us now consider whether *do*-support in English could be accounted for in a similar way. There are four main environments in which *do* appears in the T position in English, namely negative clauses, emphatic clauses, VP ellipsis, and VP raising, shown in the examples in (22).[14]

  (22) a. John does not know.
       b. John DOES know.
       c. John knows and Mary does too.
       d. Bob asked Mary to leave John, and leave him she did.

It could be argued that in all these contexts T contains an extra, non-default feature. Biberauer and Roberts (2008) argue that all these contexts involve the same feature, namely [+affective]. They argue that this is a type of polarity feature. (22a) is a negative clause, so it could be argued that T contains a negative polarity feature. In (22b) the auxiliary *do* is emphatic. In this case then, T could be argued to contain an emphatic-positive polarity feature. Although the auxiliary in (22c) and (22d) is not stressed as it is in (22b), there is evidence to suggest that in these environments, the auxiliary is still emphatic. For example, in cases of VP ellipsis and VP raising, the auxiliary cannot be phonologically reduced, so sentences such as those in (23) are ungrammatical.

  (23) a. *John has left and Mary's too.
       b. *She said she had left and left she'd.

Emphatic auxiliaries cannot be phonologically reduced. This could explain why we do not find reduced auxiliary forms in VP ellipsis and VP raising constructions.

Biberauer and Roberts argue that a [+affective] feature on T will not always result in the insertion of *do*. When there are modal or aspectual features in T then T will be realized as a modal or aspectual auxiliary rather than *do*. In DM terms, the auxiliary that matches the largest number of features in T will be inserted there. So, when there are modal or aspectual features on T, the more highly specified modal and aspectual auxiliaries (e.g., *will, can, must, is, have*) match the feature specification of T more closely and are inserted in place of *do*. When, however, there are no aspectual or modal features in T, then *do* will be inserted.

Although it seems possible to link the environments in which we find *do* with a single very general [+affective] feature, this may not be necessary, if we adopt an account similar to that proposed above for OIr. Like C in OIr, T is not always realized in English; there is an alternation between *do* and ø. It was argued that the alternation between *no* and ø in OIr depends on whether or not C reached the point of Vocabulary Insertion. This could also be the case in English.

It is commonly argued that the tense and φ-features associated with T in English are in some sense affixal (see, among others, Lasnik, 1981). Let us assume that, like in OIr, these features are morphological affixes, i.e., they need to combine with non-default features in T. When a modal or aspectual auxiliary is present in T, the tense and φ-features will have a host, and so will be spelled out with the auxiliary in T and deleted in V. When a negative or emphatic feature, namely one of the features that are associated with the *do*-support contexts above, is in T, this again provides a host for the tense and φ-features. However, these features do not have a specific phonological realization. There is no specific VI to realize them, and so the elsewhere morpheme *do* is inserted. If no extra features are present in T, the tense and φ-features have no host, T violates the SAF, and

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[14]The use of *do* in C and in other environments, such as tag questions, will be left for future research.

as such will be deleted at PF. The tense and ɸ-features are then phonologically realized on V, giving the effect of Affix Hopping. Under this view, the alternation between *do* and ø in English, like that between *no* and ø in OIr, corresponds to whether or not the relevant head (T in English, C in OIr) reaches the point of Vocabulary Insertion.

5 Conclusion

This paper has considered data from OIr *no*-insertion, developing a new account of this construction within the framework of Distributed Morphology. It has been suggested that the analysis proposed for OIr may also apply to English *do*-support. Further research is necessary to establish whether this account of *do*-support can be maintained when all the relevant data are taken into consideration. However, this paper demonstrates that *do*-support is not unique to English, that similar constructions may be found cross-linguistically, and that the study of these may shed light on this long-standing problem in the syntax of English.

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